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ABSTRACT

Technology in business and industry is continually changing the activities performed in the office. New activities are emerging; others are increasing or declining in importance. This project was concerned with identifying high-priority, commonly accepted abilities which are presently emerging and increasing in importance in the office and with developing general and specific instruction plans which would aid business and office instructors in preparing students for office occupations. Questionnaire responses from 668 authorities concerning the prepared list of 41 office activities revealed few significant differences among activities declared emerging or increasing in importance. A similar analysis identified nine activities applicable to all levels of office personnel which were emerging or increasing in importance. A second group of six emerging activities was applicable to clerical, supervisory, and professional-technical personnel, and a third group of 15 emerging activities was applicable in particular to managers, professional-technical personnel, and supervisors. Eighteen general instruction plans and a model for producing general and specific instruction plans were developed. This project is a part of the total project entitled New Office Business Education Learnings System (NOBELS). (JS)

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BUSINESS EDUCATION FOR THE EMERGENT OFFICE

Harry Huffman

and

Dale D. Gust

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INTERIM REPORT
ON
PROJECT NO. 8-0414
GRANT NO. OEG-0-0-080414-3733 (083)

BUSINESS EDUCATION FOR THE EMERGENT OFFICE

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ABSTRACT

The two major purposes of Business Education for the Emergent Office were (1) to identify high-priority, commonly-accepted abilities which are presently emerging and increasing in importance in offices across the United States, and (2) to develop general and specific instruction plans which would aid business and office instructors to prepare students for the emergent office.

A preliminary list of 25 emerging office activities revealed from a literature search was expanded to 41 activities with the help of three groups: (1) National appointees of selected business firms, (2) business and industry professionals concerned with office management in Denver, Colorado, and (3) similar professionals in Los Angeles, California. Responses to 3,300 mailed questionnaires were obtained from 668 authorities, who were members of the Association for Systems Management, the Administrative Management Society, American Records Management Association, and the national appointees.

Analysis revealed few significant differences among activities declared "emerging" or "increasing in importance," hence showing that these activities were commonly perceived by authorities in different regions of the nation and by members of different professional organizations. A similar analysis identified nine emerging activities applicable to all levels of office personnel. A second group of six emerging activities was applicable to clerical, supervisory, and professional-technical personnel. A third group of fifteen emerging activities was identified that are applicable in particular to managers, professional-technical personnel, and supervisors.

Eighteen general instruction plans were developed, each of which can be used to generate numerous specific instruction plans for individual performance goals. A model for producing additional general and specific instruction plans was developed.

PREFACE

Technological changes in business and industry are altering the structure of information processing. Hence, activities performed in the office are also changing. New activities are emerging; others are increasing in importance; and some are declining in importance. The project reported herein concerns the instruction of youth and adults for participation in the emergent office. It is a part of the total project entitled New Office Business Education Learnings System.

Many practicing authorities in office and administrative management participated in various phases of the project. Two meetings were held with them in each of Denver, Colorado, and Los Angeles, California, to develop and review the questionnaire. Additionally, practicing authorities from business and industry across the nation also contributed items by correspondence for the questionnaire.

William E. Perkins, associate in business education, University of California at Los Angeles, identified participants for the Los Angeles emergent office meetings.

Dr. Catherine M. Jones, Associate Professor of Business Education, University of Oregon, contributed two months of her sabbatical leave to the project during 1969.

Several members of the staff of Colorado State University (Dr. Harry Gibson, Dr. Ruth Moyer, and Dr. John D. Staples) participated as consultants. Dr. Janie L. Jones, Southeastern State College (Oklahoma); Clyde E. Howell, Southern Colorado State College; Maurice E. Ransom, Palmer High School (Colorado Springs, Colorado) were research assistants.

James C. Carstens, research associate, Colorado State University, assisted with the development of the final report.

Appreciation is expressed to all listed above and many others who were consulted at various times.

Harry Huffman
Dale D. Gust

PART I PROBLEM, OBJECTIVES,AND DEFINITIONS

STATEMENT OF THE PROBLEM

The technological advances that brought about a revolution in other spheres of human endeavor are now causing a revolution in office procedures which is largely affecting the second level of office workers. The first level of office workers who register transactions and events require little extensive training. However, these workers are needed in the same or even in greater numbers than before. It is with this group that business and office educators in the high school have often become almost solely pre-occupied. Once transactions and events are registered, the second level of office workers must systematically process the information. However, the second level workers who processed manually on a production-line basis are now needed in fewer and fewer numbers. A new second level of office workers whose tasks involves the application of a new conception of the value of information and the adaptation of technological changes of hardware and software for processing information are replacing the former second level of workers. This new breed rapidly increasing in numbers needs abilities that are primarily conceptual. The responsibility for the educational preparation of these new workers is increasingly expected from the high schools, community colleges, technical institutes, and adult programs.

Business and office educators at the high school and post-high school level must now occupy themselves with a greater concern for the conceptual preparation of second level office workers. The new concern does not require the neglect of preparing the first level of office workers. It does, however, require business and office

educators to balance their efforts and to discover what requirements and qualifications are needed for the newly emerging group who need to be conceptually-oriented. The next step then would be to design the necessary educational preparation for it.

Hence, a change in the business and office curriculum seems to depend on answers to three problems:

The first problem concerns analysis of the abilities required in the emergent office. The emergent office is that aspect of the office responding to technological advances in the collection, processing, storage, and retrieval of information. Information is broadly interpreted as any oral or recorded meaningful data. Kallaus mentions the "information machine"[1] as being part of the new technologies affecting the office. Many job titles in the emergent office are likely to be the same as job titles of the past. The duties under the job title are, however, changing on account of emerging office activities.

Propst sees the emergent office almost wholly in environmental terms since he is largely concerned with the space, layout, and furniture. From the standpoint of the human performer, he believes the office is a place for "thinking," "transacting abstractions" of real events, providing "information service," expressing individuality through "display and recall," "generating work," meeting "multi-responsibilities in multi-work stations," "conversing," and maintaining "health and vitality."[2] His extensive concern for conceiving of new

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[1]Kallaus, Norman F., "Hardware: A New Man-Machine Interface," A Taxonomy of Office Activities for Business and Office Education, The Center for Vocational and Technical Education, Ohio State University, Chapter 4, 1968, p. 88.

[2]Propst, Robert, The Office--A Facility Based on Change, The Business Press, Elmhurst, Illinois, 1968, pp 19-22.

and different space requirements for the changing office underlines the interest of business and industry in the emergent office, which is also the major concern of this project.

> In business, the office is a place in an organization where information processing work is performed: numbers are accumulated, classified, calculated, and summarized; letters are written; budgets are duplicated and distributed; bills are paid; minutes of meetings are typed and filed; and progress reports for complex projects are organized. The role of the office in an organization is supportative to management (the decision makers) and to vital functions of the organization such as manufacturing, marketing, personnel administration, and finance. Information which the office processes does not originate in the office. It originates in the vital functions--on the production line, in the factory, and at management meetings. The supportative role of the office to a manager or administrator can be compared to the supportative role which a drafting room plays to an industrial engineer.

Place emphasizes the "supportative role of the office to the manager or administrator"[2] and sees this role as a part of the emergent office. It will be seen later that her emphasis is reflected in a questionnaire developed to discover the activities that are emerging in the office. The first problem, therefore, requires a discovery of the activities that are and will be performed in the emergent office.

The second problem involves updating the business and office curriculum on the basis of the new and different abilities needed to carry out activities in the emergent office. Updating the curriculum involves converting the new ability requirements into educational objectives in the form of performance goals that explicitly and unambiguously describe jobs and tasks in the emergent office.

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[1]Place, Irene, "Systems and Procedures Research in Office and Administrative Management," From A Report of the Business and Office Education Research Planning Conference, March 1966, The Center for Vocational and Technical Education, Ohio State University, pp 34, 35.

[2]Ibid

Briefly, a performance goal may be defined as an educational objective that clearly states measurable and observable performance (with tolerances) that identify for the student and teacher the conditions under which the events or steps involved in learning will take place.[1]

This definition is quite similar to that advanced by Morrison who says that performance goals or "instructional objectives are unambiguous statements of student performance which include the criteria for success and the important conditions under which performance is to take place."[2]

Since the new abilities required by the emergent office must be combined with what has been taught previously, unnecessary, redundant, and irrelevant material must be eliminated from the present program. The learning requirements must be sequenced so that individual students can complete a sufficient number of performance goals to become employable. Additionally, provision must be made for transferrability of learning and flexibility of adjustment to new situations by the students.

Thus, a new curriculum would incorporate the emergent portion of "office occupations," be realistic and relevant to emerging job opportunities, respond to continuous changes on the basis of feedback, and become accepted by users--the employers.

[1]Huffman, Harry and Byers, Edward E., Preparing Performance Goals in Vocational and Technical Education, Project 66, The Center for Vocational and Technical Education, Ohio State University, In Process.

[2]Morrison, Edward J., Development and Evaluation of an Experimental Curriculum for the New Quincy (Mass.) Vocational Technical School. Pittsburgh, Pennsylvania: American Institutes for Research, Seventh Quarterly Technical Report, December 31, 1966, p. 10.

The third problem concerns the improvement of pre-service and in-service teacher education programs. Teacher educators are responsible for preparing classroom instructors who in turn prepare young people to accept positions in the emergent office. Hence, teacher educators should acquaint present and prospective teachers with any new developments that might lead to improvement of instruction. The use of performance goals is a new aid to better instruction--an approach which any classroom instructor, present or future, should consider implementing. The conclusions in Part III on page 120 discuss the procedures for implementing the use of performance goals by teachers.

OBJECTIVES

The specific objectives of this project are (1) to obtain a list of high-priority abilities needed for the emergent office, and (2) to develop and write performance goals for the emergent office based on the discovered abilities.

DEFINITION OF TERMS

A number of terms used throughout this report are defined for convenient reference below.

Condition - Various types of stimuli (stipulations, provisions, requisites) that control the direction of the task.

A stimulus which one must pay attention to in performing the task.

Criteria - A standard or test by which behavior is evaluated.[1]

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[1]Mager, Robert F., Preparing Objectives for Programmed Instruction, Fearon Publishers, San Francisco, 1962, p. 2.

Emergent Office - That aspect of the office responding to technological advances in the collection, processing, storage, and retrieval of information.

Emergent Office Activities - Office activities that require abilities that were not needed previously, but are now beginning to be demanded or are greatly increasing in importance because of technological advances in the collection processing, storage, and retrieval of information.

Enabling Behavior - The students' knowledges, skills, and attitudes which are necessary for learning to perform the assigned task.

NOBELS - The name of the related project, New Office Business Education Learnings System.

Objective - A description of a pattern of behavior which the learner should be able to demonstrate; a blueprint.[1]

Performance Goal - An educational objective that clearly states measurable and observable performance (with tolerances) that identify for the student and teacher the conditions under which the events or steps involved in learning will take place.[2] (Synonymous with behavioral objective) and typically becomes an assignment from the teacher to the student.)

General Instruction Plan - A complete plan for the purpose of generating an infinite number of performance goals pertaining to a particular job activity. The plan includes conditions, tasks, criteria, and some resultant sample performance goals.

Task or Step - The smallest convenient unit of job activity having a separate purpose; specific statement of action.[3]

A group of activities that generally occur close together and have a common purpose.[4]

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[1]Mager, Op. Cit.

[2]Huffman, Harry and Byers, Edward E., Op. Cit.

[3]Morrison, Edward J., Op. Cit., 1st Quarterly Technical Report, June 30, 1965, p. 9.

[4]Smith, Robert G., Jr., The Development of Training Objectives, George Washington University Human Resources Research Office, June 1964 (Research Bulletin 11.), p.3-6,67.

Tolerance of Performance - Permissible deviations or allowable variations in quality, quantity, and time measures for acceptable performance.

PART II THE DETERMINATION OF THE ABILITIES REQUIRED IN THE EMERGENT OFFICE

RATIONALE AND RELATED STUDIES

The next paragraphs explain the relationship between this research project and the research project entitled New Office Business Education Learnings System. Also, a brief review of the literature on emerging occupations and a review of a decade of literature on the emerging office activities are presented.

Relation to NOBELS Research Project

NOBELS stands for New Office Business Education Learnings System, which addresses itself to the following:

> The immediate problem is that of developing performance or behavioral goals necessary to prepare students to enter and to hold office jobs.
>
> The long range problem is one of developing, testing, and disseminating a new office and business education learnings system. The word new modifies the approach needed to develop, test, or change business and office education problems. The term office and business education learnings means those organized learnings that are prerequisite to getting and holding an office occupation.[1]

The NOBELS project was funded by the U.S. Office of Education and placed under the direction of The Center for Vocational and Technical Education, The Ohio State University, Columbus, Ohio.

Performance goals for a current or existent office were identified by a team at Wayne State University, Detroit, Michigan, with the help of data-gathering teams at the University of California at Los Angeles, the University of Georgia, Athens, the State University of New York at Albany, and the University of Minnesota, Minneapolis. These research teams prepared performance goals based on current activities in the office.

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[1] Lanham, Frank W., Development of Performance Goals for a New Office and Business Education Learnings System, Proposal submitted to to the U.S. Office of Education, December 20, 1967, by Ohio State University, p. 1.

Performance goal development for the emergent office was centered at Colorado State University. Emergent office activities are defined as office activities that require abilities that were not needed previously, but are now beginning to be demanded or are greatly increasing in importance because of technological advances in the collection, processing, storage, and retrieval of information.

It is expected that the reports from these two major projects will be the basis for curriculum improvement, better teacher education programs, and broader program development.

Review of Literature on Emergent Occupations

One objective of this study was to obtain a list of abilities required in the emergent office which were different from those in the current office. Some of the literature identified emergent office occupations, but none of the sources reviewed related directly to the abilities required within such occupations. Although educators in several vocational service areas are conducting studies to discover emergent occupations, only those in agricultural education appear to have conducted studies to determine the abilities needed. Studies by Freier[1] and Stevenson[2] serve as examples of studies in agricultural

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[1]Freier, Ernest E., "The Minnesota Agricultural Off-Farm Occupational Opportunities and Training Needs." Preliminary summary of Anoka, Fillmore, Kandiyoki and Yellow Medicine Counties. Mankato Area Vocational-Technical School. Abstracts of Research and Related Materials in Vocational and Technical Education, Winter 1968.

[2]Stevenson, William W., "A Study of Employment Opportunities and Training Needs in Off-Farm Agricultural Occupations in Oklahoma," Oklahoma State University, Stillwater, December 1965; ARM, Fall 1967.

occupations. Bushnell[1] states that the Career Opportunity Branch of the Vocational Education Research Division of the Department of Health, Education, and Welfare has supported research to identify job tasks and skills needed in selecting, expanding, and emerging technical fields.

Closely related to this project are the Perkins and Byrd study and the Needham research study. Perkins and Byrd[2] developed a model to identify tasks performed by a sample of office workers in certain geographic areas. They also identified a list of knowledges needed to execute the tasks. Needham[3] identified common forces that must exist prior to the emergence of a technical occupation. He then developed a model to use in predicting the emergence of new technical occupations. The model should prove helpful to those concerned with developing new technical education programs.

The foregoing studies are related in a small way to the objectives of this study. None, however, attempted to achieve specifically the purposes of this project.

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[1]Bushnell, David S., "New Careers and Emerging Technical Occupations--Research Projccts Sponsored by the Division of Comprehensive and Vocational Education Research, Career Opportunities Branch." An attachment to a memorandum addressed to State Directors of Vocational Education and Directors of Research Coordinating Units, Bureau of Research, Department of Health, Education, and Welfare, Washington, D. C., August 12, 1968.

[2]Perkins, Edward R., Jr., and Byrd, F. Ross, "A Research Model for Identification of Task and Knowledge Clusters Associated with Performance of Major Types of Office Employees' Work," Washington State University, Pullman, December 1966; Abstracts of Research and Related Materials in Vocational and Technical Education, Spring, 1968.

[3]Needham, Raymond J., A Model for the Prediction of the Development of New Technical Level Programs, Unpublished Ph.D. dissertation, Colorado State University, 1969.

Efficient completion of this study, however, was made possible by a prior study, which resulted in a taxonomy of office activities for business and office education. The taxonomy sought to provide:

1. systematic guidance for the observation and analysis of office activities,
2. a common language for describing office activities,
3. a basis for consolidating data from many locations and occupations, and
4. a basis for writing performance goals.[1]

It was expected that the taxonomy could be used to identify, describe, and analyze office activities related to information processing, task management, and employee interactions.

Review of a Decade of Literature on Office Activities

A review of the literature resulted in an initial list of 25 emerging office activities. The following periodicals for one year (October, 1957, through September, 1958) and for another year, ten years later, (October, 1967, through September, 1968) were used in the review:

The Office	Office Executive
Systems	Data Systems News
Office Machines Guide	Business Automation
Office Management and Equipment	Administrative Management
	Computer and Automation
Advanced Management Journal	Systems and Procedures Journal
	SABE Data Processor

Articles in the periodicals were read and classified into approximately 50 subject-matter areas. Through reviewing and grouping, it was possible to compare the office activities that were being importantly discussed ten years ago with those ten years later. The emerging

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[1]Huffman, Harry; Brady, Mary Margaret; Peterson, Marla; and Lacy, Annell; NOBELS, New Office and Business Education Learnings System--A Taxonomy of Office Activities for Business and Office Education. The Center for Vocational and Technical Education, Ohio State University, Columbus, p. v.

office activities were classified under ten broad categories: Work Measurement and Production; Personnel; Forms Control; Systems Analysis and Design; Data Communication; Flowcharting; Paper Volume; Decision Making; Microfilming; and Company Organization.

According to the literature, the abilities needed by office workers have changed considerably. Pitman states that office workers must not only process information that is already known, but also seek information that is only partially known or only guessed at.[1] Thus, instead of being an adviser to management, the office must at times serve as a leader of management.

Davis mentions changes that have taken place as the result of automated data processing. For example, the literature in 1967-68 stressed the shortage of trained workers in computer operation. Furthermore, computers are causing a large increase in information to be read by managers and are supposedly to be used by management in decision making.[2]

The emphasis on forms control in isolation does not appear as important now as it did during the 1957-58 period. Instead, forms control is now thought of as a part of the total system of planning. Hence, properly designed forms will often help eliminate many other forms.

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[1]Pitman, Sir James, K.B.E., "Office May Become a Leader of Management," The Office, Vol. 67, No. 1, (January 1968), p. 110-111.

[2]Davis Sidney, "A Flexible Concept for Recruiting Data Processing Personnel for the 1970's." Computers and Automation, Vol. 17, No. 9, (September 1968) p. 22-23.

The new emphasis in office equipment and machines is on desk-size electronic computers that provide management with information instantly, often on television-like screens.

Data communications are now widely discussed as a part of the emergent office and are defined as a system that moves or transmits data by electronic means. Examples of the movement of data electronically are given below.

1. A hotel confirms a salesman's room reservation in another city by teleprinter communication with the chain's central office.

2. A builder receives a sketch of a change in an architectural drawing over a handwriting transmission system.

3. A police officer at a remote location uses a facsimile system to dispatch a photograph to headquarters for identification purposes.

4. A branch office manager submits time card information to the company's home office computer, using a punched card transmission system.

5. A doctor in a small town transmits an electrocardiogram of one of his patients to a distant university hospital for analysis by a heart specialist.

6. A scientist obtains a copy of a research study on space medicine from library records by means of a microfilm transmission system.

7. On Monday morning, a sales manager receives a report of the preceding week's sales via teleprinter service from the corporate data processing center.[1]

Much more discussion about microfilm appears in the 1967-68 literature. However, the analysis is on microfilm as an output of the computer and as a means of storing and retrieving information from remote centers.

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[1]Gentle, Edgar C., (Editor), Data Communications in Business, Prepared by the American Telephone and Telegraph Company, New York, N. Y., 1965, p. 2.

Delimitations

Two important delimitations applied to this project. (1)The questionnaire was developed with the assistance of groups of office and administrative managers who were innovative and research-oriented and thus it would most likely elicit responses from others similarly oriented, who are believed to be ten to twenty percent of the office management population. (2) It was expected that many questionnaires would be received by those oriented to current modes of thinking. In consequence, their responses to questions would often be limited to their pressing concerns of the moment. Hence, the questionnaire was designed so that such persons would probably not respond, thus further reducing the percent of response.

PROCEDURES AND PROJECT DESIGN

The procedures and project design are divided into five sections as follows: seven phases of the project, development of the questionnaire, plans for collection of data, plans for the analysis of data, and development of the list of respondents.

Phases of the Study

Seven phases of the project are shown on the following seven flowcharts. Each phase is briefly described below.

Phase I -- Activities were started to develop the questionnaire and plan its mailing, which include the review of a decade of literature, compilation of national mailing list of correspondents to assist in identifying emerging office activities, establishment of consultant groups at Colorado State University and in Denver, Colorado and Los Angeles, California.

Phase II -- Activities were continued, such as the compilation of questionnaire items and the first Denver and Los Angeles meetings on emergent office activities.

Phase III -- An initial, comprehensive list of questionnaire items from the review of literature and from responses of the National Letter Group was developed.

Phase IV -- Activities such as the following were continued: final mailing list of prospective respondents; development of format for questionnaire, second meetings of the consultant groups in Denver, Colorado, and Los Angeles, California.

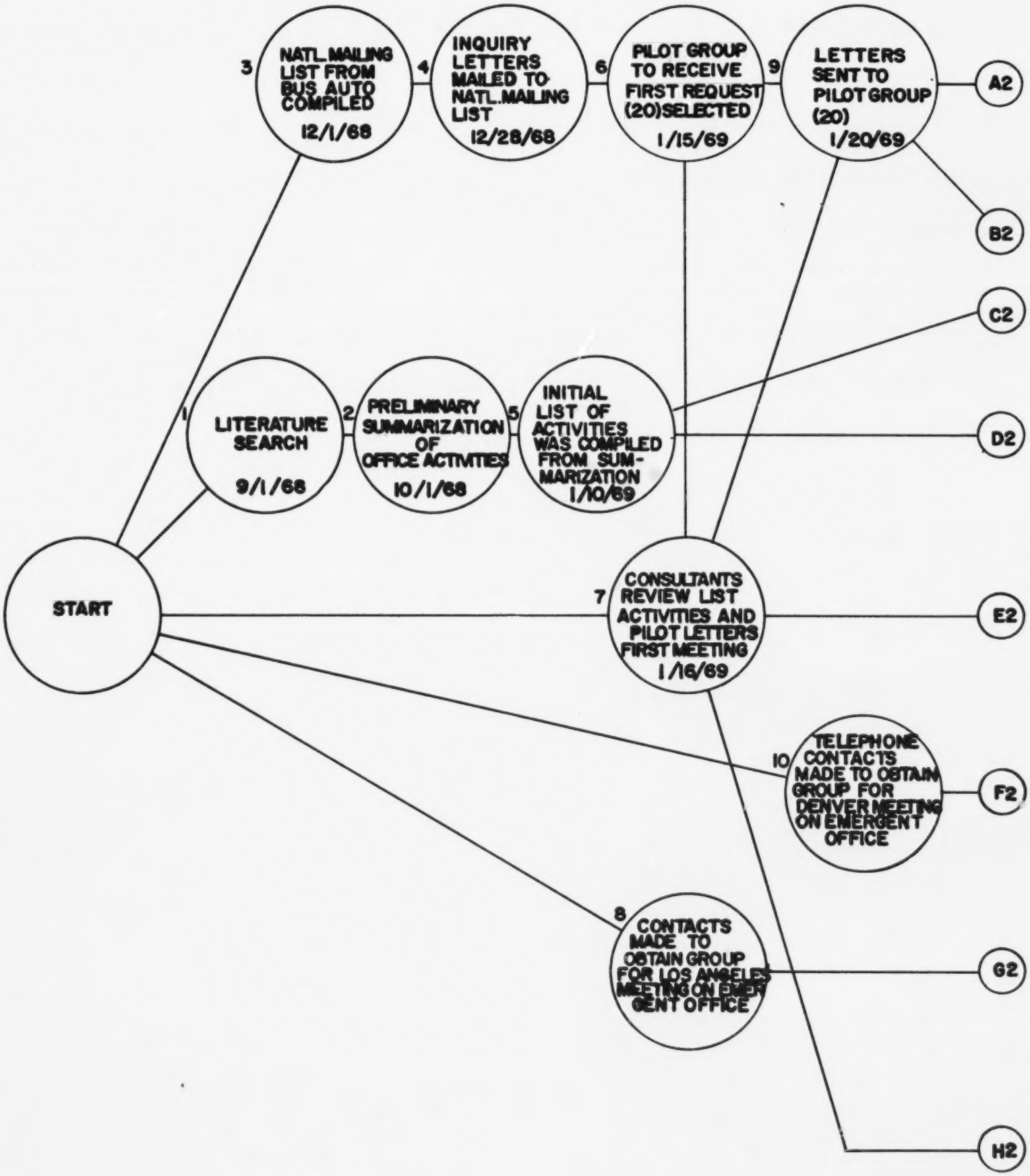
Phase V -- The proposed questionnaire was tested on 30 prospective respondents.

Phase VI -- The final draft of the questionnaire and cover letter were prepared and mailed to participating groups; the returns from the mailing were tabulated.

Phase VII -- Data were analyzed.

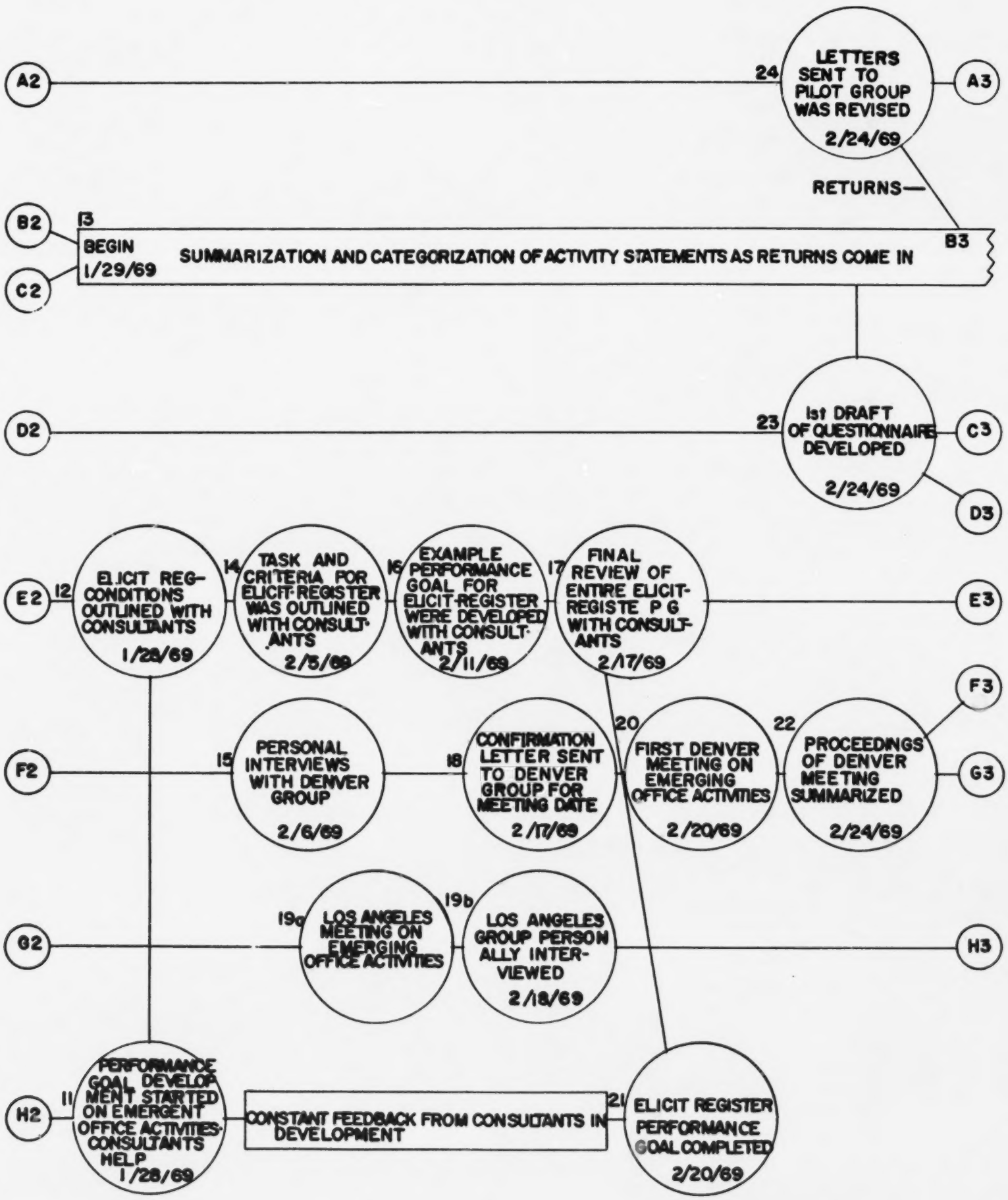
PHASE I

Figure 1. PERT Chart



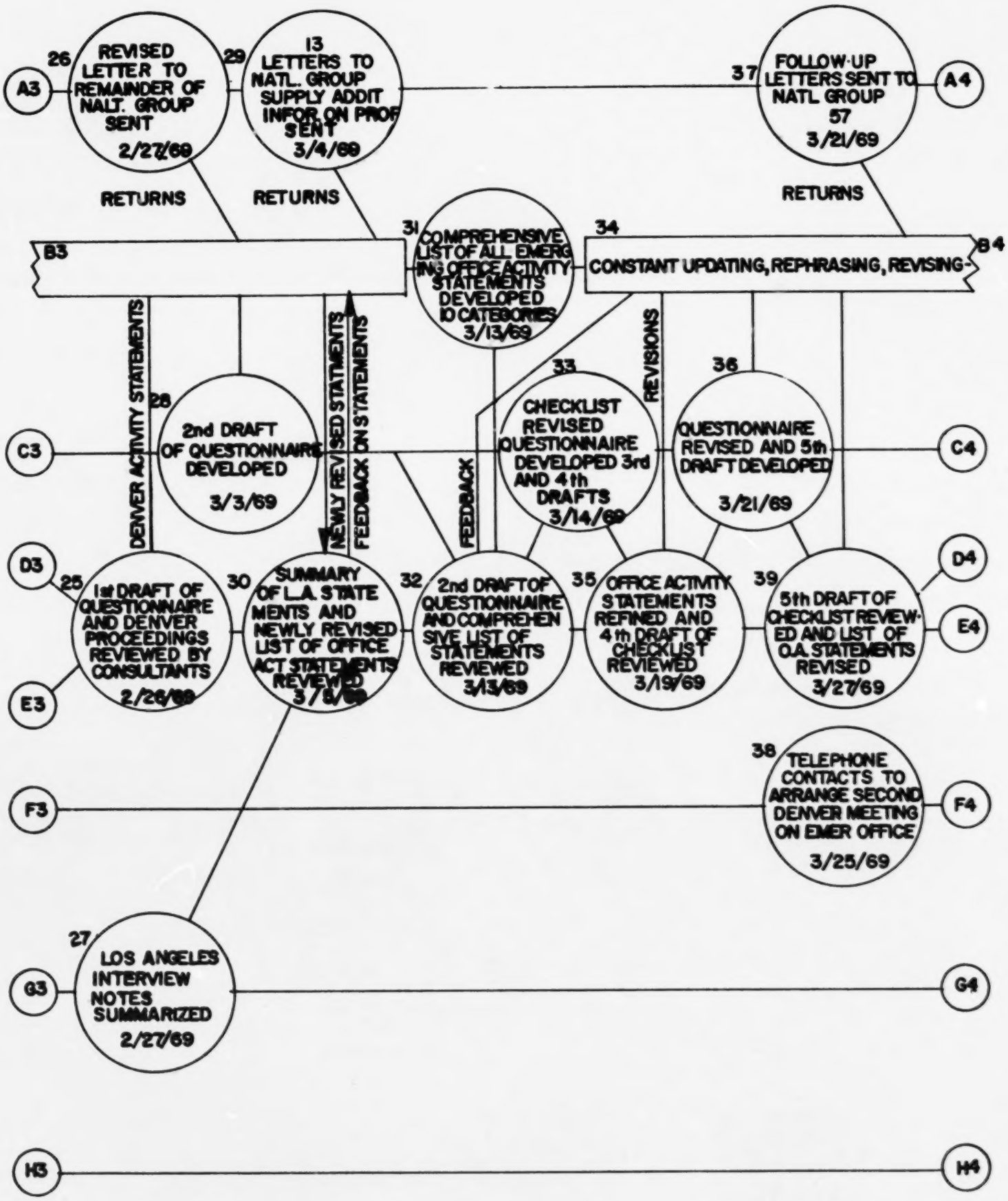
PHASE II

Figure 1 (continued)



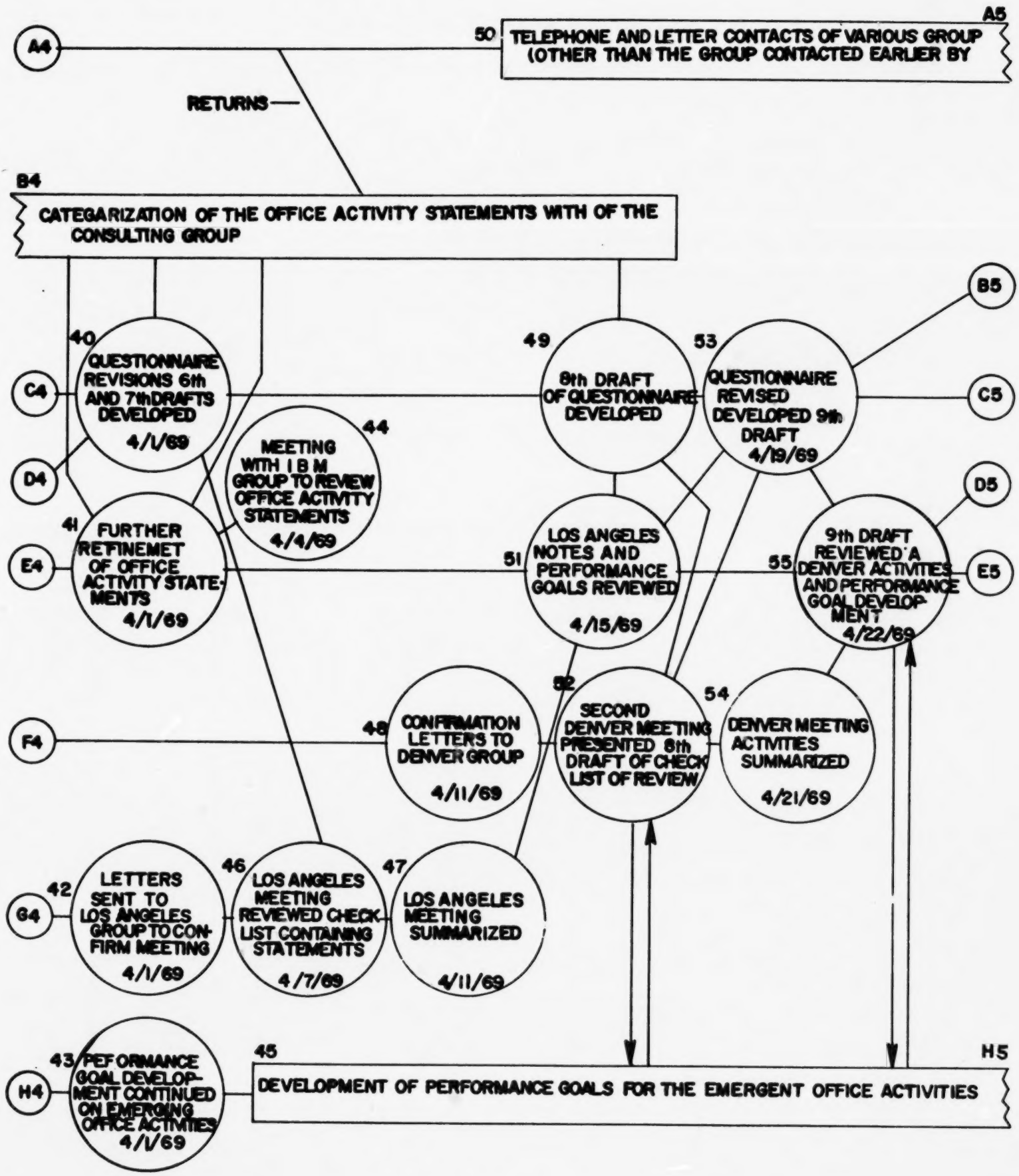
PHASE III

Figure 1 (continued)



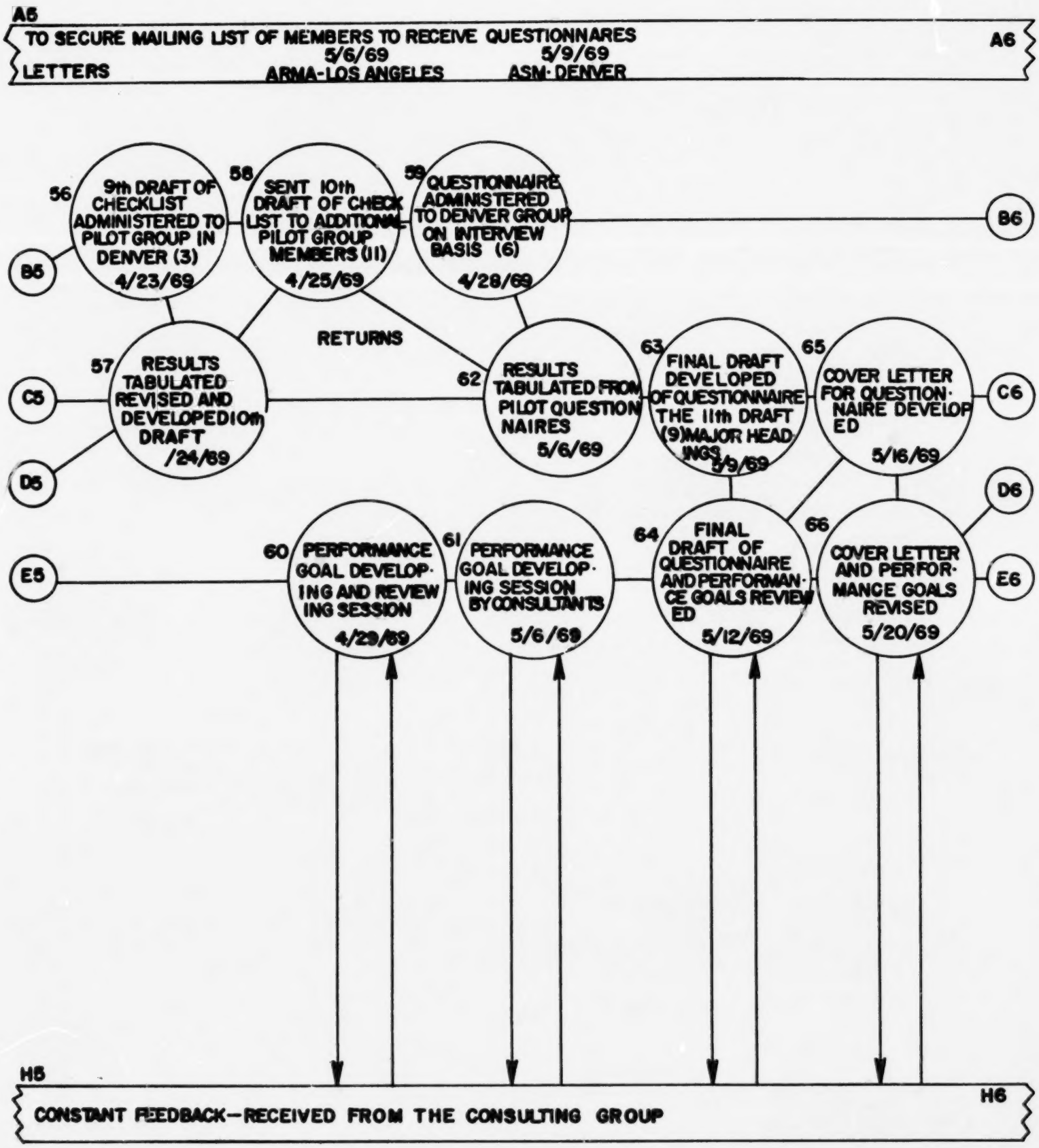
PHASE IV

Figure 1 (continued)



PHASE V

Figure 1 (continued)



PHASE VI

Figure 1 (continued)

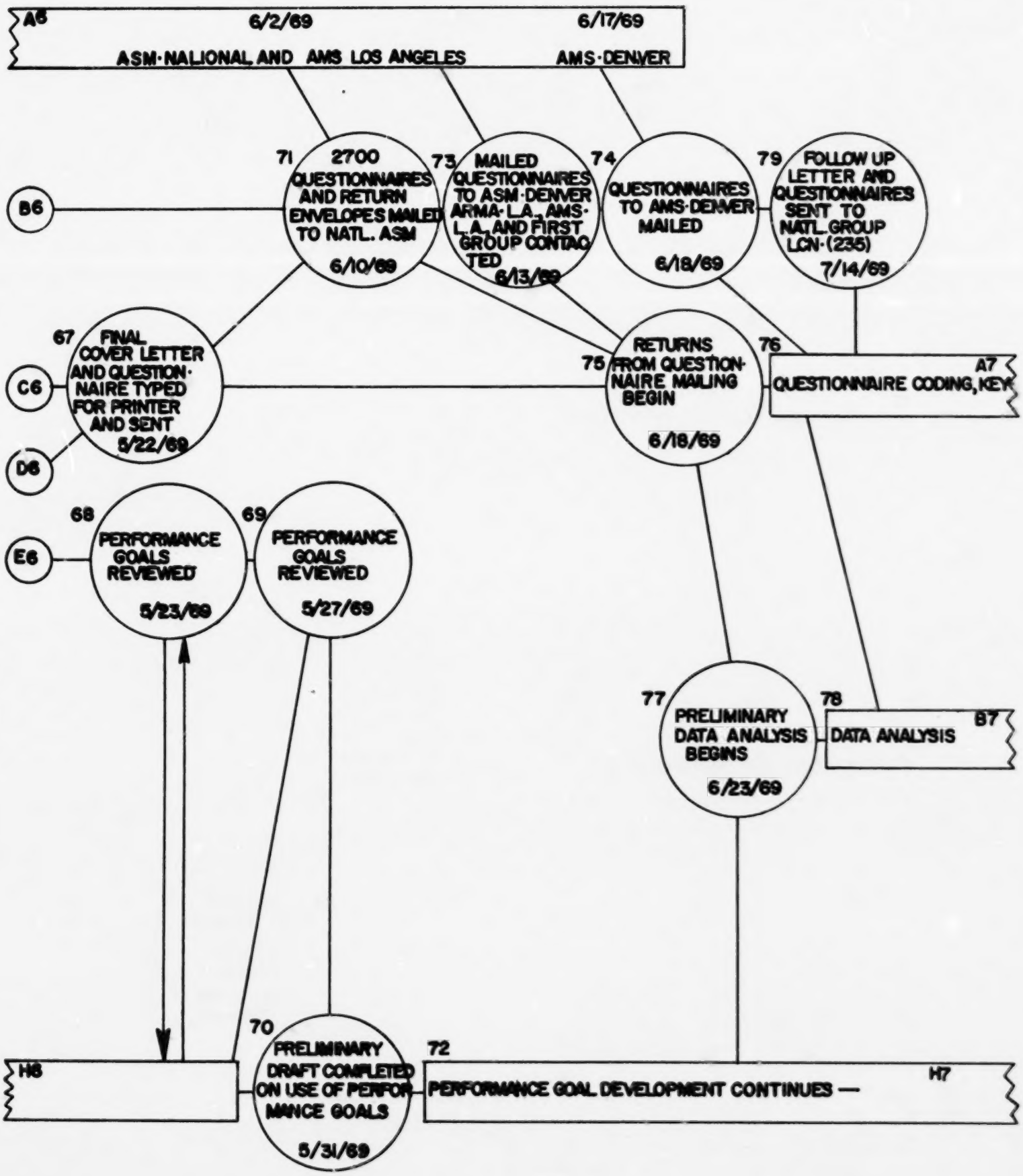


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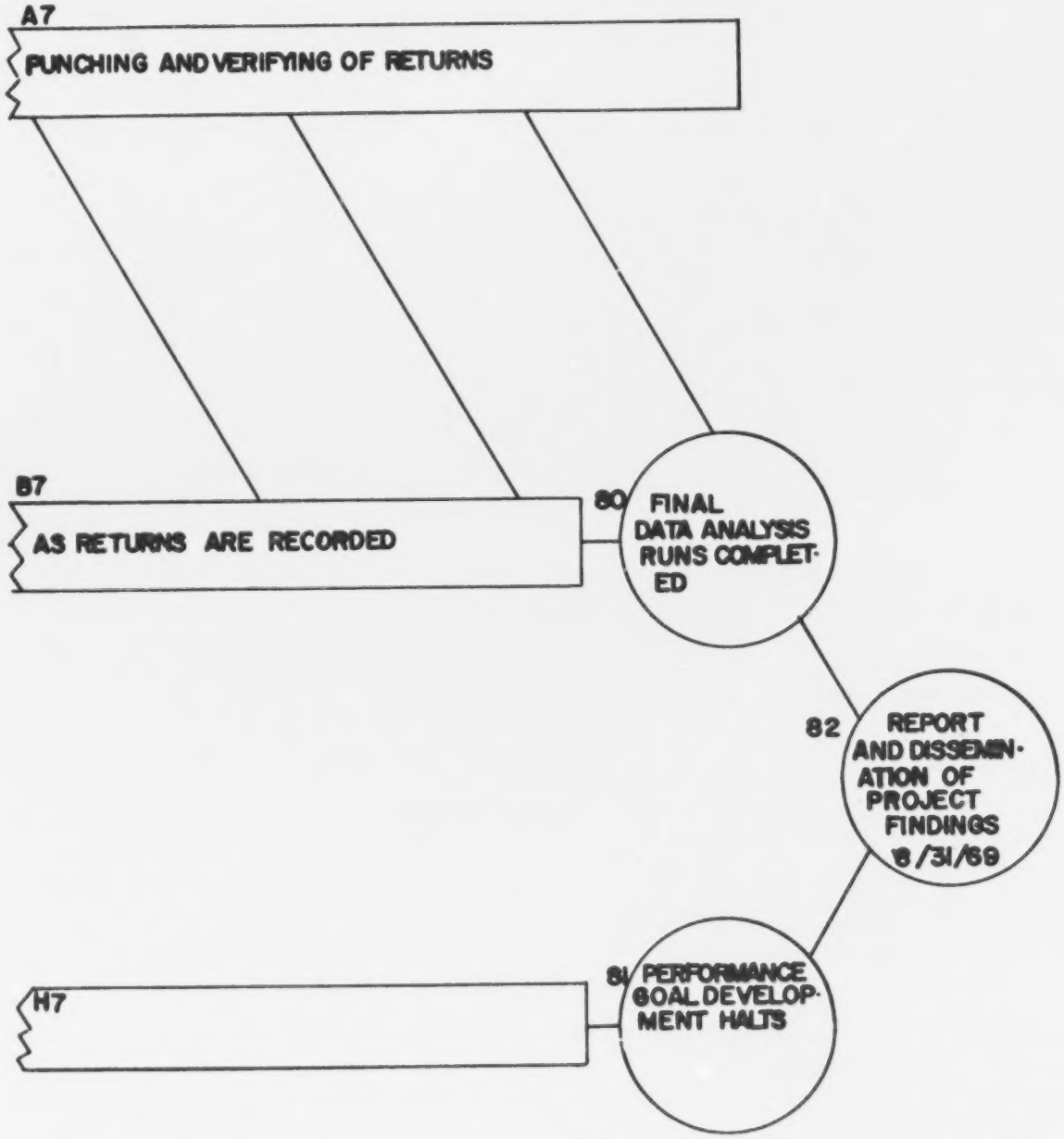
Figure 1 (concluded)



Development of the Questionnaire

The questionnaire was developed in conjunction with 25 business and industry persons concerned with office management in Denver, Colorado, and with 20 persons in Los Angeles, California. The items to be included in the questionnaire were statements of emergent office activities. An initial list of 25 activities was obtained from a review of literature for years 1957-58 and 1967-68. Changes and trends discussed in the literature during 1967-68 which were not discussed during 1957-58 comprised the initial 25 activities.

The list was expanded to 41 activities with the help of 235 appointees known as the National Letter Group. Members of the group were appointed by the management of industries and businesses listed in the September, 1968, issue of Business Automation. This group was either concerned or deeply involved with office and administrative management and its appointees were spread throughout the nation.

Two meetings were also held with each of the Denver and Los Angeles groups to review, edit, and evaluate the 41 activities. A questionnaire format was prepared for review and approval by these groups. Eleven drafts of the questionnaire resulted in the final questionnaire used in this study, which appears in the appendix.

Plans for the Collection of Data

Data were collected from the membership of the local chapters of the Administrative Management Society and Association for Systems Management in Denver, Colorado; from the membership of the local chapters of the Administrative Management Society, Association for Systems Management, and American Records Management Association in Los Angeles, California; from a random sample of 15 percent of the

national membership of the Association for Systems Management; and from 235 appointees known as the National Letter Group.

The checklist questionnaire used to collect the data was designed in such a way as to facilitate the transfer of data to punched cards. They were also coded to identify the organization and the region from which returns were received.

Plans for the Analysis of Data

Chi square analyses were used for selecting activities on which respondents from four associations and nine regions agreed. Criteria were established to determine which of the 41 activities were recognized as a part of the emergent office.

Respondent List

Questionnaires were mailed to 3,328 persons, which included the membership of the Denver chapters of the Administrative Management Society and the Association for Systems Management; the membership of the Los Angeles Chapters of the Administrative Management Society, the Association for Systems Management, and the American Records Management Association; the National Letter Group; and a randomly selected 15 percent of the national membership of the Association for Systems Management. Details of mailings are shown in Table 1.

ANALYSIS OF DATA

Presented in this section are the statistical analyses of the data collected to determine which emergent office activities were given high-priority ratings and were commonly accepted by office management authorities and practitioners in the United States.

The data analysis is presented in four parts as follows:

1. Characteristics of Respondents--Questionnaire Part I
2. Interpretation of Responses--Questionnaire Part II
3. Criteria Applied to the Selection of High-Priority Abilities
4. Summary of the 30 Emerging Activities

Participants receiving a questionnaire were asked in Part I to supply background information about their companies and their responsibilities. Tables 1-5 show frequency and percentages of responses for the activities in Part I. The tables are intended to show the reader the background of a typical respondent.

Characteristics of Respondents--Questionnaire Part I

Organizational Returns. Seven different groups were asked to participate in the study by completing checklist-questionnaires. Two groups were from Denver, Colorado; three groups were from Los Angeles, California; and two other groups were from numerous cities located throughout the nation.

Table 1 shows the percent of return of the questionnaires that were usable. Of the 675 returns, 351 were completed by those from the national mailing to the Association for Systems Management, and 127 were returned by the National Letter Group. The number from other groups is shown in Table 1.

Regional Returns. Questionnaire returns were also tabulated according to the regional classifications used by the United States Office of Education. Table 2 and Figure 2 show breakdown of the respondents into the nine USOE regions.

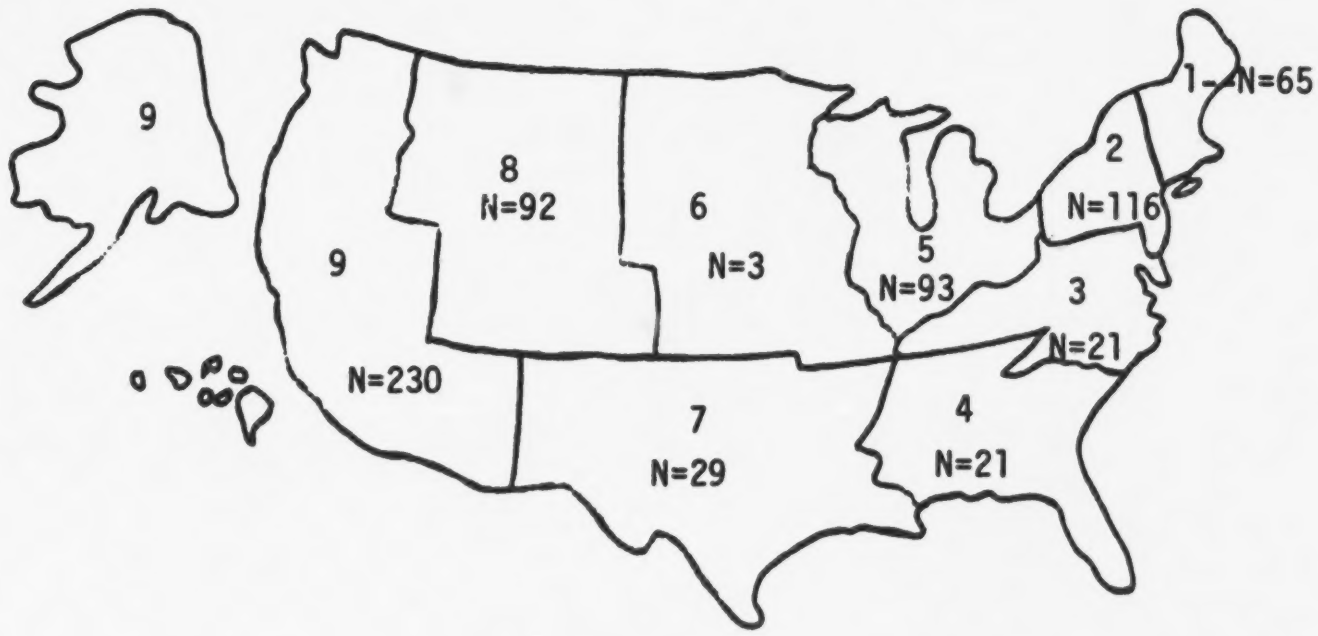
TABLE 1. PERCENTAGE OF RESPONSE FROM QUESTIONNAIRE MAILING.

Organizations	Total Questionnaires Mailed	Questionnaires Returned Answered	Percent of Return
DENVER			
AMS-Administrative Management Society	144	42	29.17
ASM-Association for Systems Management	81	30	37.04
LOS ANGELES			
AMS--Administrative Management Society	149	27	18.12
ASM--Association for Systems Management	300	70	23.33
ARMA--American Records Management Association	107	22	20.56
NATIONAL			
ASM--Association for Systems Management	2312	351	15.18
NLG--National Letter Group	235	127	54.04
UNCLASSIFIED RETURNS	———	6	———
TOTALS	3328	675	20.28

TABLE 2. FREQUENCY AND PERCENTAGE OF TOTAL RESPONSES BY REGIONS.

Regions	Number	Percent
1. Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	65	9.6
2. Delaware, New Jersey, New York, Pennsylvania	116	17.2
3. Kentucky, Maryland, North Carolina, Puerto Rico, Virginia, Virgin Islands, West Virginia, District of Columbia	21	3.1
4. Alabama, Florida, Georgia, Mississippi, South Carolina, Tennessee	21	3.1
5. Illinois, Indiana, Michigan, Ohio, Wisconsin	93	13.8
6. Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota	3	.4
7. Arkansas, Louisiana, New Mexico, Oklahoma, Texas	29	4.4
8. Colorado, Idaho, Montana, Utah, Wyoming	92	13.6
9. Alaska, Arizona, California, Guam, Hawaii, Nevada, Oregon, Washington	230	34.1
10. Unclassified	5	.7
TOTALS	675	100.0

Figure 2. USOE Regions



Returns by Company Classification. Participants in the study were asked to check the classification of the organization in which they were located. The largest percent of returns according to Table 3 came from respondents associated with manufacturing companies. The second highest percent came from respondents associated with companies dealing in services.

Returns by Assigned Responsibilities of Respondents. Participants were asked to place in rank order three of their most important assigned responsibilities from the list of 15. Table 4 lists the percents of returns which ranked responsibilities as being first in importance, second in importance, and third in importance.

TABLE 3. FREQUENCY AND PERCENTAGE OF TOTAL RESPONSES BY COMPANY CLASSIFICATION.

Company Classification	Number of Returns	Percentage of Total
Manufacturing	289	42.8
Construction	7	1.0
Wholesaling	16	2.4
Government	42	6.2
Retailing	15	2.2
Finance	81	12.0
Transportation, Communication Facilities	31	4.6
Services	136	20.2
Other	54	8.0
Not Marked	4	.6
TOTALS	675	100.0

TABLE 4. FREQUENCY AND PERCENTAGE OF TOTAL RESPONSES BY ASSIGNED RESPONSIBILITIES.

Area of Responsibility	Responsibilities Ranked 1		Responsibilities Ranked 2		Responsibilities Ranked 3	
	N	%	N	%	N	%
Product Development	15	2.2	15	2.2	19	2.8
Education and Training	22	3.3	38	5.6	49	7.3
Management Information	124	18.4	111	16.5	97	14.4
Systems and Procedures	184	27.3	152	22.6	99	14.7
Office Operations	20	3.0	49	7.3	57	8.4
Administrative Management	112	16.6	75	11.2	85	12.6
Research	8	1.2	9	1.3	9	1.3
Engineering	5	.7	3	.4	7	1.0
Advertising	0	.0	3	.4	5	.7
Public Relations	2	.3	9	1.3	13	1.9
Data Processing	81	12.0	96	14.2	104	15.5
Marketing	29	4.2	20	3.0	14	2.1
Finance	22	3.3	23	3.4	31	4.6
Personnel	26	3.9	22	3.3	17	2.5
Sales	9	1.3	15	2.2	11	1.6
Other	11	1.6	5	.7	10	1.5
Not Marked	5	.7	30	4.4	48	7.1
TOTALS	675	100.0	675	100.0	675	100.0

Of the 675 responses, 184 (27.3 percent) ranked Systems and Procedures as being the first major area of responsibility; 152 (22.6 percent) ranked it second; and 99 (14.7 percent) ranked it third. The table can be interpreted in a like manner for the remaining areas of responsibility.

The top four areas of responsibility in each category without regard to order within the category were identical; they were Systems and Procedures, Management Information, Administrative Management, and Data Processing.

Returns by Number of Employees. Table 5 shows that of the 675 respondents the vast majority, 434 (64.3 percent), were associated with companies that employed approximately 1,000 or more people. Participants were also asked to check the approximate number of information processing personnel directly under their responsibility. In response, 399 (59.1 percent) of the respondents said that they were responsible for 1 to 25 people.

An analysis of Tables 1-5 reveals that a typical respondent might be described as follows:

He is an administrative or office manager with major responsibilities in systems and procedures, management information, administrative management, data processing, or some combination; has from 1-25 information processing personnel under his direction; is employed by a manufacturing, service, finance, or other company with approximately 1,000 or more people on the payroll; and is located in one of the densely populated areas in the United States.

TABLE 5. FREQUENCY AND PERCENTAGE OF TOTAL RESPONSES BY NUMBERS OF EMPLOYED PERSONNEL.

Groupings	Approximate Number of Employees in Total Company		Approximate Number of Information-Processing Personnel Under Respondents' Responsibility	
	N	%	N	%
1 to 25	38	5.6	399	59.1
26 to 50	13	1.9	97	14.4
51 to 100	25	3.7	50	7.4
101 to 200	43	6.4	34	5.0
201 to 300	23	3.4	18	2.7
301 to 400	22	3.3	12	1.8
401 to 500	8	1.2	10	1.5
501 to 1000	65	9.6	11	1.6
1000 or more	434	64.3	29	4.3
Not Marked	4	.6	15	2.2
TOTALS	675	100.0	675	100.0

Interpretation of Responses--Questionnaire Part II

The final questionnaire contained 41 emerging office activities classified under nine major code categorizations. A copy of the questionnaire appears in the appendix.

The interpretation of the responses to the 41 activities used for data analyses is discussed in two parts below. The first part refers to the responses given by respondents for activities "Emerging" and "Increasing in Importance," and the second part refers to the responses given for "Degrees of Requirement" by levels of personnel.

Interpretation for Activities Emerging and Increasing in Importance. Participants were asked to make two decisions with regard to the degree of emergence of each of the 41 activities. First, they were requested to:

> Check whether the office activity (although it may have been in existence for some time) is Increasing in Importance. For example, due to changing or advancing office technology.

Secondly, they were requested to:

> Check whether the office activity is Emerging. For example, emerged recently or is now emerging for an activity that is different from those performed previously.

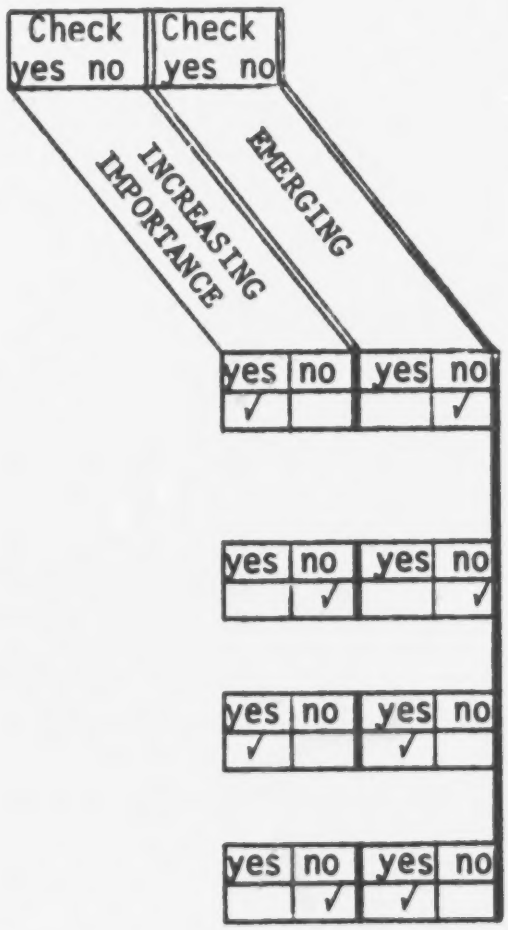
The choices for checking both decisions were either a "yes" or a "no."

Four example statements with responses were illustrated for the participants to study and were to serve as guidelines for marking their statements. The excerpt from the checklist-questionnaire on the following page shows the four possible combination responses.

Participants were encouraged to respond to activities both as to whether they were "Increasing in Importance" and "Emerging."

Responses to statements not like one of the four shown in the excerpt were omitted from the analyses.

In interpreting the various combinations of responses, it was felt that the first three, "yes-no," "no-no," and "yes-yes" were self explanatory. The response of "no-yes" signified that the activity was not increasing in importance, but it was emerging. For example, the activity of using a voice-actuated typewriter could be considered as emerging. However, because of the many technological problems in the development of such a typewriter, it might not be considered as increasing in importance.



Interpretation for Degrees of Requirement by Levels of Personnel. The participants were also asked to make four decisions with regard to their expected requirement of the ability for different personnel levels. They were requested to:

> Check one of the three choices for each level of office personnel to indicate your degree of requirement of the office activity.
>
> 1. You Would Like to Require This Ability From Your Personnel In The Future.
> 2. You Are Seeking Office Personnel With Such Abilities Now.
> 3. The Activity Has Not Changed Its Status Or Is Not Applicable For This Level of Personnel.

The above questions were included in the checklist to determine for which level or levels of personnel the activity was "Emerging." The following excerpt from the checklist-questionnaire shows an example of the four checks requested for each statement.

Check One For Each Level			
Levels	In The Future	Seeking Now	NC or NA
Man			✓
Sup		✓	
Cler	✓		
P&T		✓	

The respondents were asked not to respond to the "Levels" of personnel if they had answered with a "no-no" combination concerning the "Increasing In Importance" or "Emerging" portion of the statement.

The next section of this study utilizes the interpretations outlined in this section for determining the high-priority abilities.

Criteria Applied to the Selection of High-Priority Abilities

Responses to the 41 activities were analyzed to select high-priority abilities. Four criteria were used in the selection as follows:

Criterion 1. Three of four chi square analyses computed among organizational groups for each of the 41 activities should show no significant differences. Table 6 shows which activities met this requirement. The .05 level of confidence was used to determine the level of significance since it excluded more doubtful activities than would the .01 level of confidence.

Criterion 2. Chi square analyses computed among the regions for each activity must show no significant differences. Table 7 shows which activities met this criterion. The .05 level of confidence was used to determine the level of significance.

Criterion 3. The activity must receive 50 percent of the total responses for "Emerging." Other high percents could be used as shown in the summary charts at the end of this section.

Criterion 4. The activity must receive 50 percent or more of the total responses for the combined total of "In The Future" and "Seeking Now" percents. Each level of personnel was considered separately.

The remainder of this section discusses the selection of abilities needed in the emergent office by applying the criteria.

Application of Criterion 1--Agreement Among Organizations. Four comparisons using chi square were computed for each of the 41 activities using various combinations of the seven participating organizational groups. Table 6 shows the resulting 164 chi square values. The 41 code numbers refer to the various activities. A copy of the questionnaire containing the 41 activities and their accompanying code numbers appears in the appendix.

Chi squares were calculated utilizing the responses for "Emerging," "Increasing in Importance Only," and "Neither." The responses for these three activities were compared among organizational groups. Four comparisons were made for each activity. These were:

Comparison 1. The combined responses of the Denver ASM and AMS chapters were compared with the combined responses of the Los Angeles ASM, AMS, and ARMA chapters. Significant differences were found only for codes B3, G8, and H1.

Comparison 2. The responses from the national membership of ASM were compared with the responses from the NLG (National Letter Group). Significant differences were found for codes B2, C2, F1, F2, F3, F5, F7, G4, G7, and H5. It is important to observe here that 127 (54.04 percent) of the NLG responded, while 351 (15.18 percent) of the national membership of ASM responded. The lack of disagreement between these two national groups for the remaining activities appears to demonstrate that even though the percent of respondents from ASM was small, it was in agreement with the larger percent responding from the National Letter Group.

Comparison 3. The combined responses from the Denver ASM and AMS chapters and the Los Angeles ASM, AMS, and ARMA chapters were compared with the responses from the NLG. Significant differences were obtained for codes C3, I1, and I2.

Comparison 4. A three-way comparison of respondents from Denver ASM and AMS, Los Angeles ASM, AMS, and ARMA, and the NLG was made in a 3 x 3 chi square analysis for each of the 41 activities. Significant differences were obtained for codes A2, B3, and G8. It is important to observe that 127 (54.04 percent) of the NLG responded, while 72 (32 percent) of the Denver groups responded and 119 (21.42 percent) of the Los Angeles groups responded. Even though the percents of return were different, they were in agreement.

The chi square values in Table 6 were also analyzed by reading across the page. For example, the four chi square comparisons for A1 resulted in no significant differences. The comparisons for A2 resulted in one significant difference, that being in the fourth comparison. In analyzing the 41 activities in the same manner, the following summary was obtained:

No or One Significant Difference	Two Significant Differences
A1 A2 A3 A4	B3
B1 B2 B4	G8
C1 C2 C3	
D1 D2 D3	
E1 E2 E3	
F1 F2 F3 F4 F5 F6 F7	
G1 G2 G3 G4 G5 G6 G7	
H1 H2 H3 H4 H5	
I1 I2 I3 I4	

TABLE 6. COMPARISONS OF ORGANIZATIONAL GROUPS RESPONDING TO THE 41 EMERGING OFFICE ACTIVITY STATEMENTS BASED ON CHI SQUARE ANALYSIS.

Activity Code	(df=2) Denver Groups (N=72) With Los Angeles' Groups (N=119)	(df=2) Natl. ASM (N=351) With Natl. Letter Group (N=127)	(df=2) Denver and Los Angeles' Groups (N=119) With Natl. Groups (N=479)	(df=4) Denver Groups (N=72) With Los Angeles' Groups (N=119) With Natl. Letter Group (N=127)
A1	0.000	2.048	2.481	.301
A2	1.129	5.449	3.535	11.735*
A3	.858	1.589	1.771	3.333
A4	.114	.711	1.578	1.648
B1	.411	1.144	4.441	2.458
B2	.085	9.674**	2.125	6.043
B3	11.777**	3.552	.060	13.159*
B4	1.695	4.281	2.106	8.459
C1	1.708	.387	3.365	3.183
C2	.304	8.580*	.051	4.206
C3	3.103	5.329	9.574**	7.128

*Significant at .05 level of confidence.
**Significant at .01 level of confidence.

TABLE 6 (continued)

Activity Code	(df=2) Denver Groups (N=72) With Los Angeles' Groups (N=119)	(df=2) Natl. ASM (N=351) With Natl. Letter Group (N=127)	(df=2) Denver and Los Angeles' Groups (N=119) With Natl. Groups (N=479)	(df=4) Denver Groups (N=72) With Los Angeles' Groups (N=119) With Natl. Letter Group (N=127)
D1	4.178	1.820	3.437	4.416
D2	.447	1.105	5.048	3.713
D3	3.247	.409	3.325	5.213
E1	.337	5.688	.300	3.568
E2	5.214	2.776	1.753	5.650
E3	1.664	2.816	.842	2.419
F1	.887	13.197**	5.346	6.110
F2	1.325	10.545**	3.801	2.502
F3	.260	8.040*	.081	3.672
F4	.156	2.111	.462	1.165
F5	1.743	7.831*	1.007	3.272
F6	1.937	2.953	2.747	3.326
F7	1.193	6.212*	2.417	1.694
G1	4.484	1.583	3.710	4.882

TABLE 6 (concluded)

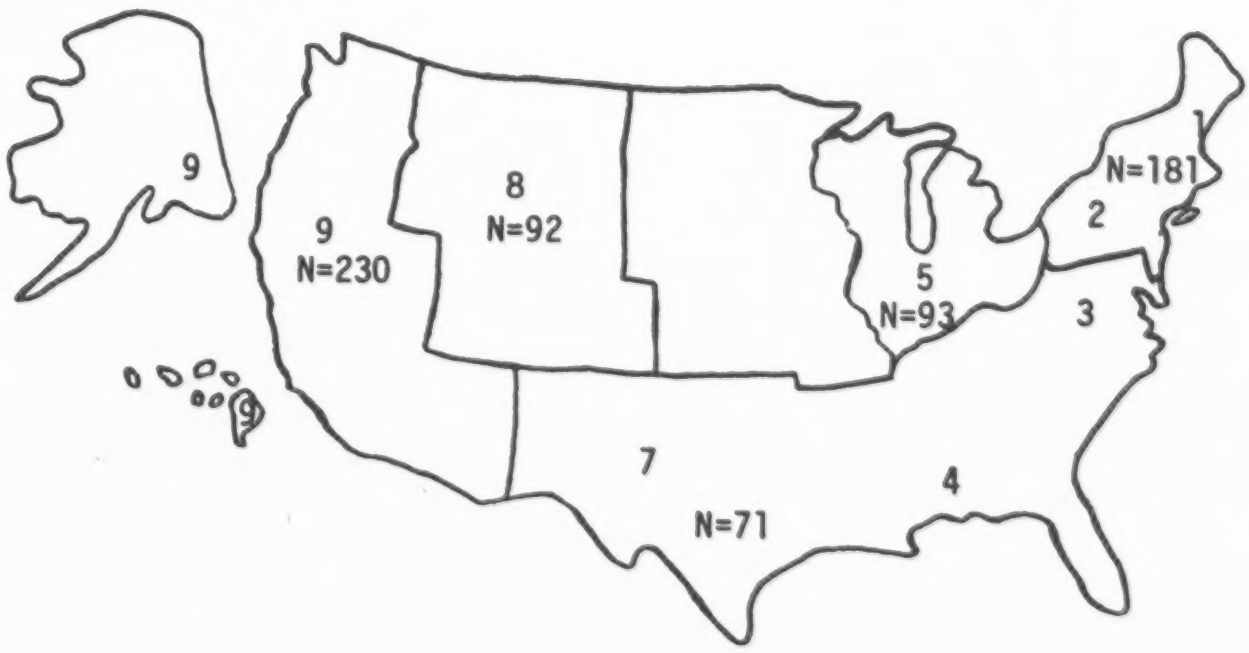
Activity Code	(df=2) Denver Groups (N=72) With Los Angeles' Groups (N=119)	(df=2) Natl. ASM (N=351) With Natl. Letter Group (N=127)	(df=2) Denver and Los Angeles' Groups (N=119) With Natl. Groups (N=479)	(df=4) Denver Groups (N=72) With Los Angeles' Groups (N=119) With Natl. Letter Group (N=127)
G2	.439	3.808	.071	1.903
G3	1.013	2.608	.279	3.113
G4	2.319	6.349*	.898	3.067
G5	1.482	.572	.935	2.863
G6	.146	.067	4.000	.734
G7	2.700	11.888**	.852	5.868
G8	8.888*	.352	2.218	12.080*
H1	6.249*	1.625	.867	8.710
H2	1.076	1.430	4.561	5.895
H3	1.517	1.553	1.436	6.000
H4	.733	.075	.125	.561
H5	2.598	11.223**	.271	5.985
I1	.556	2.334	11.746**	6.238
I2	1.339	2.001	7.714*	3.436
I3	.911	1.659	1.745	3.369
I4	.135	4.640	3.891	1.691

When criterion 1 was applied, 39 activities were considered high-priority and commonly accepted by the respondents for curricula consideration (see Table 6). The two activities eliminated were B3 and G8.

Application of Criterion 2--Agreement Among Regions of the United States. Chi square analyses were also used to make comparisons of responses for activities among the nine USOE regions. Due to consistently small frequencies for the "Neither" responses for each of the regions, they were dropped from the regional chi square analyses. The list of the nine USOE regions used in this study appears in Figure 3.

Because of consistently low cell frequencies of responses from Regions 1, 2, 3, 4, and 7, responses from these regions were combined. Most logical for combining of responses into one group were Regions 1 and 2 as shown on the accompanying map in Figure 3. Forming another group were Regions 3, 4, and 7. Regions 5, 8, and 9 were treated

Figure 3. Groups Compared in Regional Analyses



individually. Therefore, the chi square analyses resulted in a 5 x 2 table for each of the 41 activities with responses from five groups being compared. Figure 3 also shows the resulting five regional groups. Responses from Region 6 were eliminated from the analysis because of small cell frequencies. The chi square values calculated for each of the 41 activities appear in Table 7.

Significant differences were found for codes B1 and B3. No significant differences were found for the remaining 39 activities.

When criterion 2 was applied, 38 of the 39 remaining activities (two were eliminated by criterion 1) were considered high-priority and were commonly accepted by respondents for curricular consideration (see Table 7 for regional comparisons). The activity eliminated was B1.

Application of Criterion 3--Degree of Emergence. Table 8 represents frequency and percentage of response for activity A1 appearing in Part II of the questionnaire from which the degree of emergence of the office activities can be extracted. The total "N" reflects the number of usable responses out of a possible 675.

The reading and interpretation is explain in detail as follows:

The code and title of Table 8 is shown at the top, which is "A1--ABILITY TO COMPREHEND AND CONCEPTUALIZE THE SYSTEM OF THE ORGANIZATION OR UNIT AS A VAST NETWORK OF INFORMATION FLOW AND TO UNDERSTAND AS AN EMPLOYEE ONE'S POSITION IN THE OPERATION OF THE SYSTEM."

The first section of the table at the left of the double vertical lines is concerned with "Percent of Total Response for Emerging, Increasing in Importance Only, and Neither." The second section at the right of the double vertical line will be discussed under

TABLE 7. COMPARISONS OF REGIONAL[1/] RESPONSES TO THE 41 EMERGING OFFICE ACTIVITY STATEMENTS BASED ON CHI SQUARE ANALYSIS.

Activity Code	Chi Square (df=4)	Activity Code	Chi Square (df=4)	Activity Code	Chi Square (df=4)	Activity Code	Chi Square (df=4)
A1	4.933	C3	7.043	F4	1.698	G7	6.442
A2	.650	D1	2.259	F5	2.224	G8	6.972
A3	1.051	D2	3.133	F6	3.420	H1	4.239
A4	4.121	D3	9.313	F7	2.274	H2	1.721
B1	9.631*	E1	1.374	G1	2.871	H3	3.987
B2	2.739	E2	3.270	G2	1.136	H4	1.567
B3	11.920*	E3	1.963	G3	.401	H5	1.284
B4	7.732	F1	2.002	G4	.087	I1	.620
C1	3.537	F2	3.025	G5	1.745	I2	2.871
C2	.337	F3	2.711	G6	3.527	I3	3.366

1/ Regions 1 and 2 (N=181); Regions 3, 4, and 7 (N=71); Region 5 (N=93); Region 8 (N=92); Region 9 (N=230).

* Significant at .05 level of confidence.

TABLE 8. A1--ABILITY TO COMPREHEND AND CONCEPTUALIZE THE SYSTEM OF THE ORGANIZATION OR UNIT AS A VAST NETWORK OF INFORMATION FLOW AND TO UNDERSTAND AS AN EMPLOYEE ONE'S POSITION IN THE OPERATION OF THE SYSTEM.

Percent of Total Responses for Emerging, Increasing in Importance Only, and Neither			Percent of Total Responses for Each Degree of Requirement by Levels							
				Levels of Personnel						
Degree of Response	N	%	Degree of Requirement	Management N	%	Supervisory N	%	Clerical N	%	Prof-Tech N	%
Emerging	416	65.9	In the Future	68	11.0	136	22.2	223	37.0	105	17.3
Incr. Impor. Only	178	28.2	Seeking Now	389	62.9	418	68.3	196	32.6	409	67.3
Neither	37	5.9	NC or NA*	161	26.1	58	9.5	183	30.4	94	15.4
Totals	631	100.0	Totals	618	100.0	612	100.0	602	100.0	608	100.0

*No Change or Not Applicable

"Application of Criterion 4--Levels of Personnel." Of the 631 respondents to the questionnaire for A1, 416 (65.9 percent) rated the activity as "Emerging." "Increasing In Importance Only" was checked by 178 (28.2 percent), and "Neither" was checked by 37 (5.9 percent) of the respondents.

Table 8 and 47 other tables[1] were analyzed according to criterion 3 to determine the respondents' agreement on the degree of emergence of the remaining 38 activities. The basic information in the omitted 47 tables appears later in Charts 1-9.

One of the 38 activities received an "Emerging" rating from 80 to 90 percent of the total responses. The statement is as follows:

> E2--Ability to communicate via data communication devices and to know the limitations, methods of utilization, and choose from available equipment for particular operations.

Four activities received ratings for "Emerging" from 70 to 80 percent of the total responses. These four activities include the following:

> B2--Ability to adjust quickly to new equipment, procedures, and work sequences brought about by rapid technological changes for the purpose of updating skills, increasing individual productive capacity, and raising company output.
>
> C2--Ability to interface between management and informational systems personnel.

---

[1]Gust, Dale D., New and Emerging Office Activities, Ph.D. Dissertation, Colorado State University, Fort Collins, December 1969, 155 pp.

F6--Ability to ascertain what information should be programmed into an integrated information system.

G2--Ability to input data in an on-line, real-time system to obtain information for report preparation, office work production, and exception reporting.

"Emerging" ratings from 60 to 70 percent of the responses were given to 14 of the activities. They were as follows:

A1--Ability to comprehend and conceptualize the system of the organization or unit as a vast network of information flow and to understand as an employee one's position in the operation of the system.

B4--Ability to perform adequately in one system, switch to another system and perform adequately, and then switch back and perform adequately again. (Total job flexibility)

C3--Ability to recognize how innacurate data entering a system may affect outcomes on succeeding jobs.

D1--Ability to gain rapport with all racial groups.

E1--Ability to summarize output from information systems for the purpose of presenting management with concise reports.

F1--Ability to identify and select among a number of alternate combinations of equipment, procedures and people for that combination which best accomplishes a certain established objective, purpose, or goal according to certain criteria.

F2--Ability to identify information needed by management for decision-making purposes.

F3--Ability to formulate plans for collecting, processing, storing, and retrieving of information to meet the needs of the organization.

G4--Ability to determine what happened to produce the results in an information system and to provide corrections of data, if needed.

G6--Ability to utilize contemporary record storage techniques including microfilm, microfiche, aperture cards, etc., including indexing and operating the system.

H2--Ability to operate various computer data manipulation devices. (Input, Output, Storage, and Retrieval)

H4--Ability to ascertain and analyze the capabilities and functions or copying machines, data reproduction equipment, and data display terminals.

I1--Ability to write and execute information systems programs.

I2--Ability to locate information systems services and to select those that are appropriate.

Eleven activities received "Emerging" ratings from 50 to 60 percent of the total responses. These activities were:

C1--Ability to analyze the needs, attitudes, motivations, and actions of others to facilitate the desired outcomes.

E3--Ability to interpret and communicate the findings resulting from research studies.

F4--Ability to contribute to or conduct a feasibility study.

F5--Ability to contribute to or conduct cost effectiveness studies.

F7--Ability to formulate standards, to measure performance, and to implement control activities, comparing results with expectations and reporting exceptions.

G1--Ability to construct basic flowcharts for projects, systems, or subsystems for purposes of planning, analyzing, implementing, controlling and budgeting.

G3--Ability to review information systems output to determine if there are errors.

H1--Ability to operate various pieces of new equipment through self-instruction or in-service training. (MTST, Electronic Calculator, ATS, etc.)

H3--Ability to operate microfilm and microfiche equipment.

I3--Ability to convert data to appropriate coding schemes.

I4--Ability to assemble and arrange input data for processing.

Therefore, when criterion 3 was applied, 30 of the remaining office activities were rated "Emerging" by 50 percent or more of the respondents.

Application of Criterion 4--Levels of Personnel. As was mentioned previously, the right side of Table 8 along with the other 47 tables appearing in the Gust thesis dealt with a summary of responses concerning the degree to which an ability was required of various levels of personnel, which included managers,supervisors, clerical workers, and professional-technical personnel.

An example of how the four levels in Table 8 are interpreted follows:

With regard to the "Management" level of personnel, 618 respondents supplied the following information: 68 respondents (11 percent) checked that they would like to require this ability "In the Future," 389 (62.9 percent) checked that they were "Seeking Now" employees with such ability, and 161 (26.1 percent) checked "No Change" or "Not Applicable." The data for the remaining three levels of personnel should be interpreted in the same manner as that interpreted above for "Management."

As a measure of strength to determine what the "need" and "future demand" was for an emerging ability as a requirement for specific levels of personnel, the percents for "In the Future" and "Seeking Now" were combined prior to application of criterion 4.

Criterion 4 was applied to the 30 emerging, high-priority activities. Each level of personnel was considered separately and percent intervals beginning with 50 percent were used. The results after application of criterion 4 appear below by personnel levels.

Management.--Of the 30 emerging activities, 23 were rated by respondents as requirements "now" and "in the future" for management personnel. The degree of requirement of the ability by respondents for management is reflected by the percent interval in which the ability falls.

Percent Interval	Activity Code for Management
90.0 - 100.0	
80.0 - 89.9	C1, D1, E3, F1, F6
70.0 - 79.9	A1, B2, C2, C3, E2, F2, F3, F4, F5, F7, I2
60.0 - 69.9	B4, E1
50.0 - 59.9	G1, G2, G3, G4, H4

Supervisory.--Of the 30 emerging activities, all were rated by respondents as requirements "now" and "in the future" for supervisory personnel. They appear as follows:

Percent Interval	Activity Code for Supervisory
90.0 - 100.0	A1, B2, C1, C2, C3, D1
80.0 - 89.9	B4, E1, E2, F1, F2, F3, F4, F5, F6, F7, G3, G4, G6
70.0 - 79.9	E3, G1, G2, H4
60.0 - 69.9	H1, H2, H3, I2, I3, I4
50.0 - 59.9	I1

Professional-Technical.--All 30 of the emerging activities were rated by respondents as being required "now" and "in the future" of

professional-technical personnel. They appear as follows:

Percent Interval	Activity Code for Professional-Technical
90.0 - 100.0	
80.0 - 89.9	A1, B2, C2, C3, D1, E1, E2, E3, F1, F2, F3, F4, F5, F6, F7, G1, G2, G3, G4, G6, I1, I2, I3
70.0 - 79.9	B4, C1, H2, H4, I4
60.0 - 69.9	H1, H3
50.0 - 59.9	

Clerical.--Fifteen of the 30 emerging activities were rated by respondents as being required of clerical personnel "now" and "in the future." They are summarized below by percent intervals.

Percent Interval	Activity Code for Clerical
90.0 - 100.0	H1, H3
80.0 - 89.9	B2, B4, C3, I4
70.0 - 79.9	D1, G3, G6, H2
60.0 - 69.9	A1, G2, G4, I3
50.0 - 59.9	E2

Therefore, application of criterion 4 resulted in the determination of the abilities needed "now" and "in the future" for managers, supervisors, clerical workers, and professional-technical personnel.

Summary of the 30 Emerging Activities

The 30 emerging, high-priority activities are summarized in this section in nine charts according to the nine codes in the questionnaire. Each chart illustrates all of the activities from one code that were selected when criteria 1, 2, 3, and 4 were applied. The minimum percent used in the charts for acceptance was 50 percent. The charts were prepared from Table 8 previously described, and from the other 47 tables appearing in the Gust thesis. The selected high-priority activities are summarized below according to the nine codes.

Code A--Organization Structure. The four activities are concerned with abilities that an employee should have with regard to comprehending the system of the organization or unit,his position in and responsibility toward the organization or unit,his role in the organization, and the importance of a profit-making enterprise.

Chart 1 illustrates how activity A1 meets the criteria and shows that employees who have the ability to comprehend and conceptualize the system of the organization as a vast network of information flow are needed for all four levels of personnel.

The left side of the chart shows the percent of responses who rated the activity "Emerging." For example, activity A1 received approximately 66 percent of the responses for "Emerging." For the right side, the percent of response for "Seeking Now" and "In the Future" were combined to present a picture of the demand for this ability. The percent for each level of personnel was calculated separately. Therefore, activity A1 is in demand of management

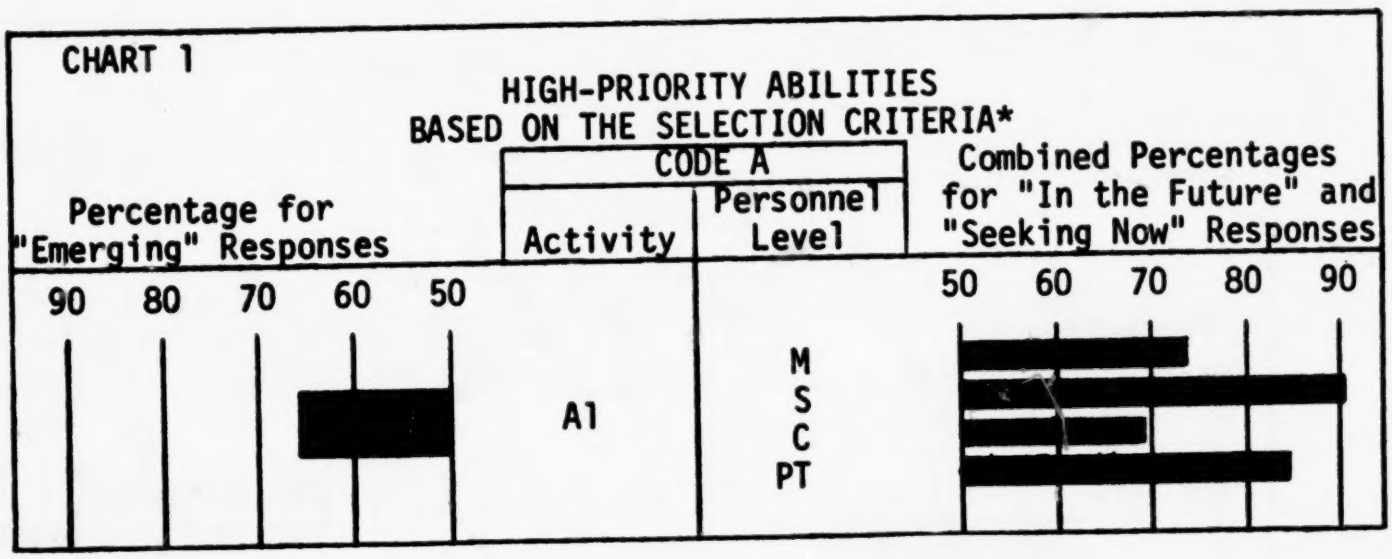
personnel to the extent that approximately 74 percent of the responses indicated so. A similar interpretation can be made for supervisory personnel, approximately 92 percent; clerical, approximately 69 percent; and professional-technical, approximately 85 percent.

Activities A2, A3, and A4 did not meet the proposed criteria as summarized below.

Activity Code	Reason for Rejection
A2	Below 50 percent on Emerging
A3	Below 50 percent on Emerging
A4	Below 50 percent on Emerging

CHART 1

HIGH-PRIORITY ABILITIES
BASED ON THE SELECTION CRITERIA*

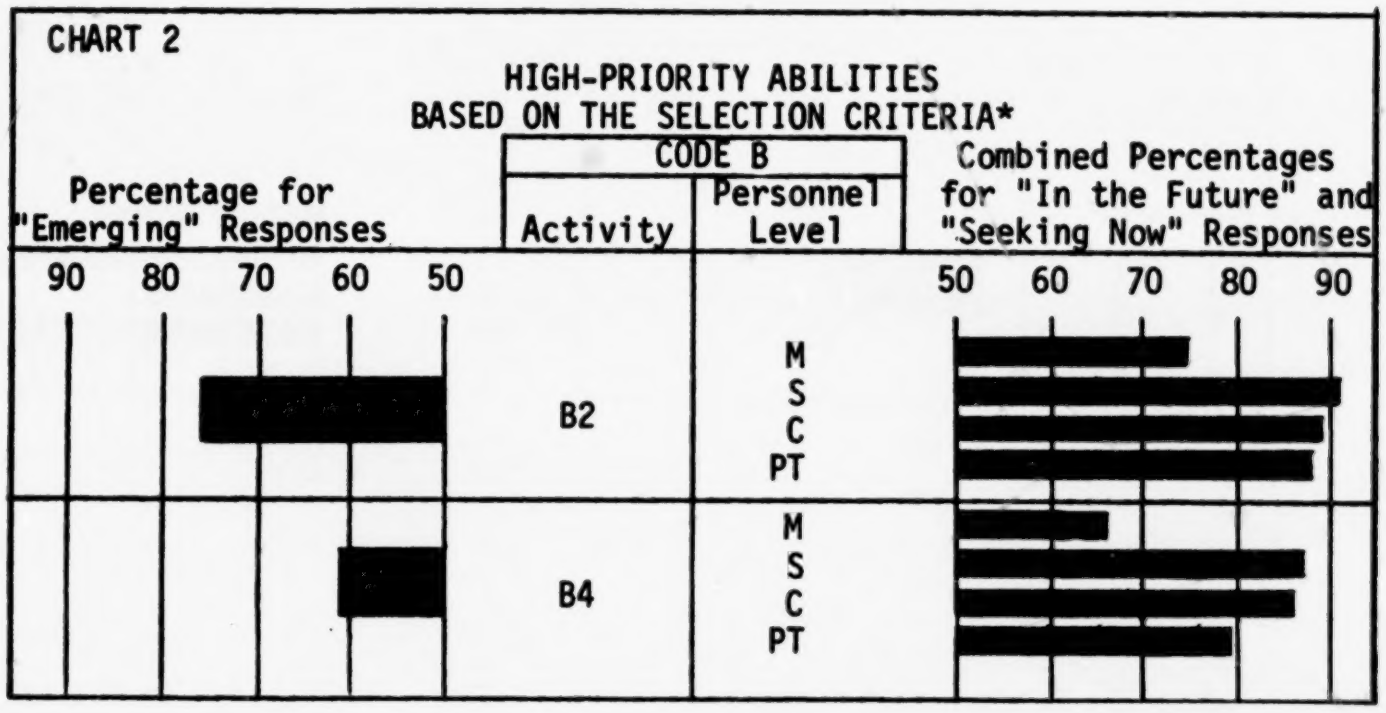


Code B--Personnel Adaptability. The four activities under Code B are concerned with the employee's ability to adjust positively and quickly to policy changes, new equipment, procedures, work sequences, and to possess job flexibility.

Chart 2 illustrates how only activities B2 and B4 met the criteria. It was found that the abilities of adjusting to new equipment, procedures, and work sequences (B2), as well as job flexibility (B4), are needed by all levels of personnel.

Activities B1 and B3 did not meet the proposed criteria as explained below:

Activity Code	Reason for Rejection
B1	Significant difference at the .05 level for regional chi square analysis
B3	Significant difference at the .05 level for regional chi square analysis, and
B3	Two significant differences at the .05 level among organizational chi square analyses



Code C--Personnel Responsibility. The three activities in Code C are concerned with the employee's ability to analyze the needs, attitudes, motivations, and actions of others, ability to formulate common boundaries between management and informational systems personnel, and the ability to foresee the importance of correct data entering the system.

Chart 3 illustrates how activities C1, C2, and C3 meet the criteria. It was found that the abilities to analyze the needs, attitudes, and motivations of others (C1) and to interface between management and informational systems personnel (C2) are needed by the management, supervisory, and professional-technical levels of personnel. However, the ability to recognize how inaccurate data entering a system may affect outcomes on succeeding jobs (C3) is considered a requirement for all levels of personnel.

Code D--Communication, Oral. The three activities in Code D are concerned with the employee's ability to communicate with racial groups, analyze verbal communications feedback, and elicit oral information from non-cooperative sources.

Chart 4 illustrates how activity D1, ability to gain rapport with all racial groups, meets the criteria, and is needed for all levels of personnel.

Activities D2 and D3 did not meet the proposed criteria established for selection to the high-priority list as explained on page 57.

CHART 3

HIGH-PRIORITY ABILITIES
BASED ON THE SELECTION CRITERIA*

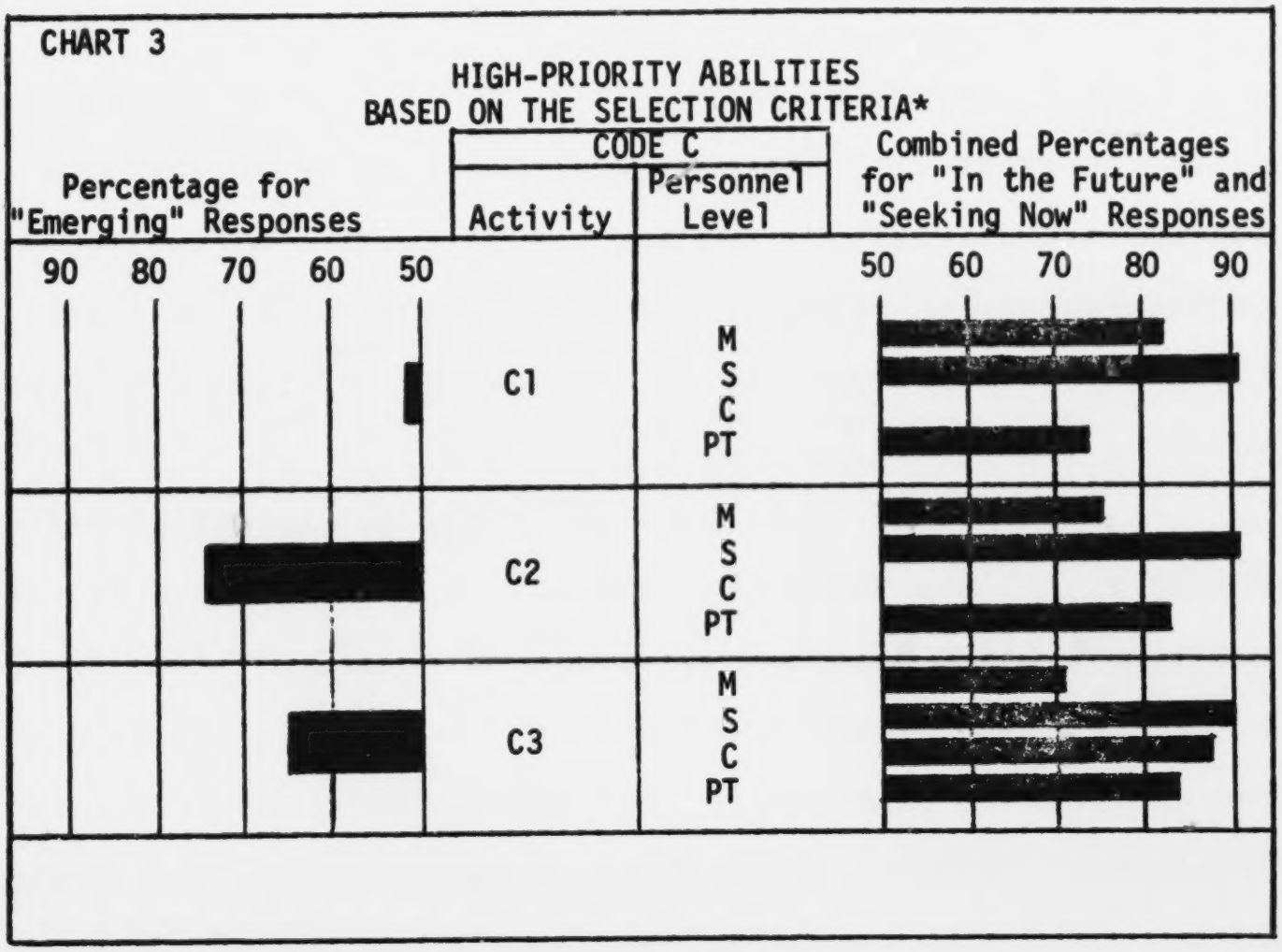
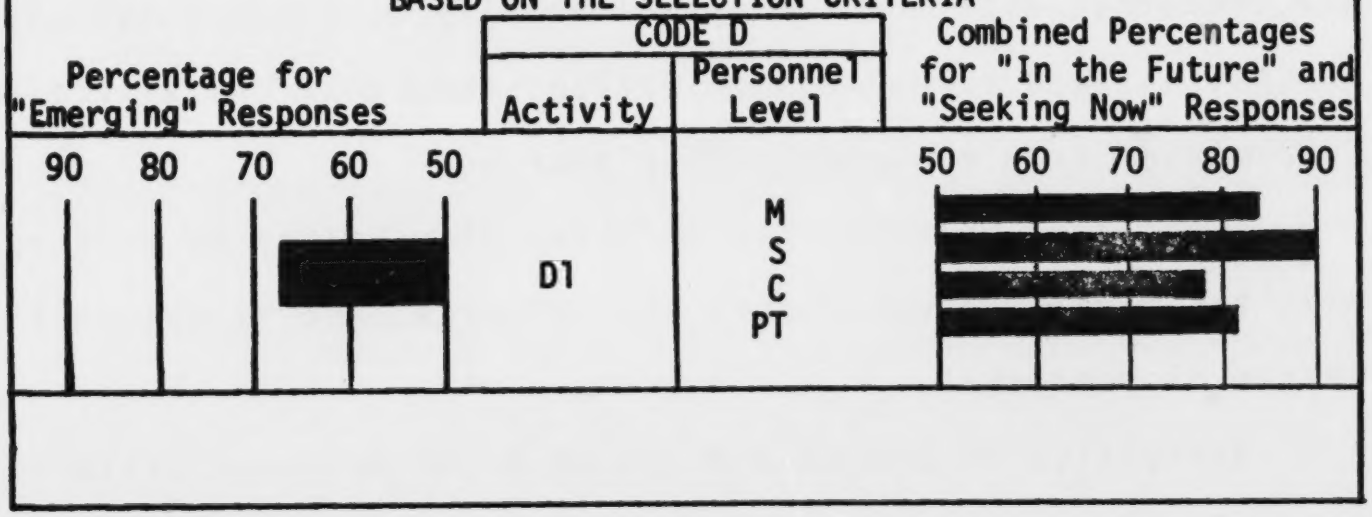


CHART 4

HIGH-PRIORITY ABILITIES
BASED ON THE SELECTION CRITERIA*



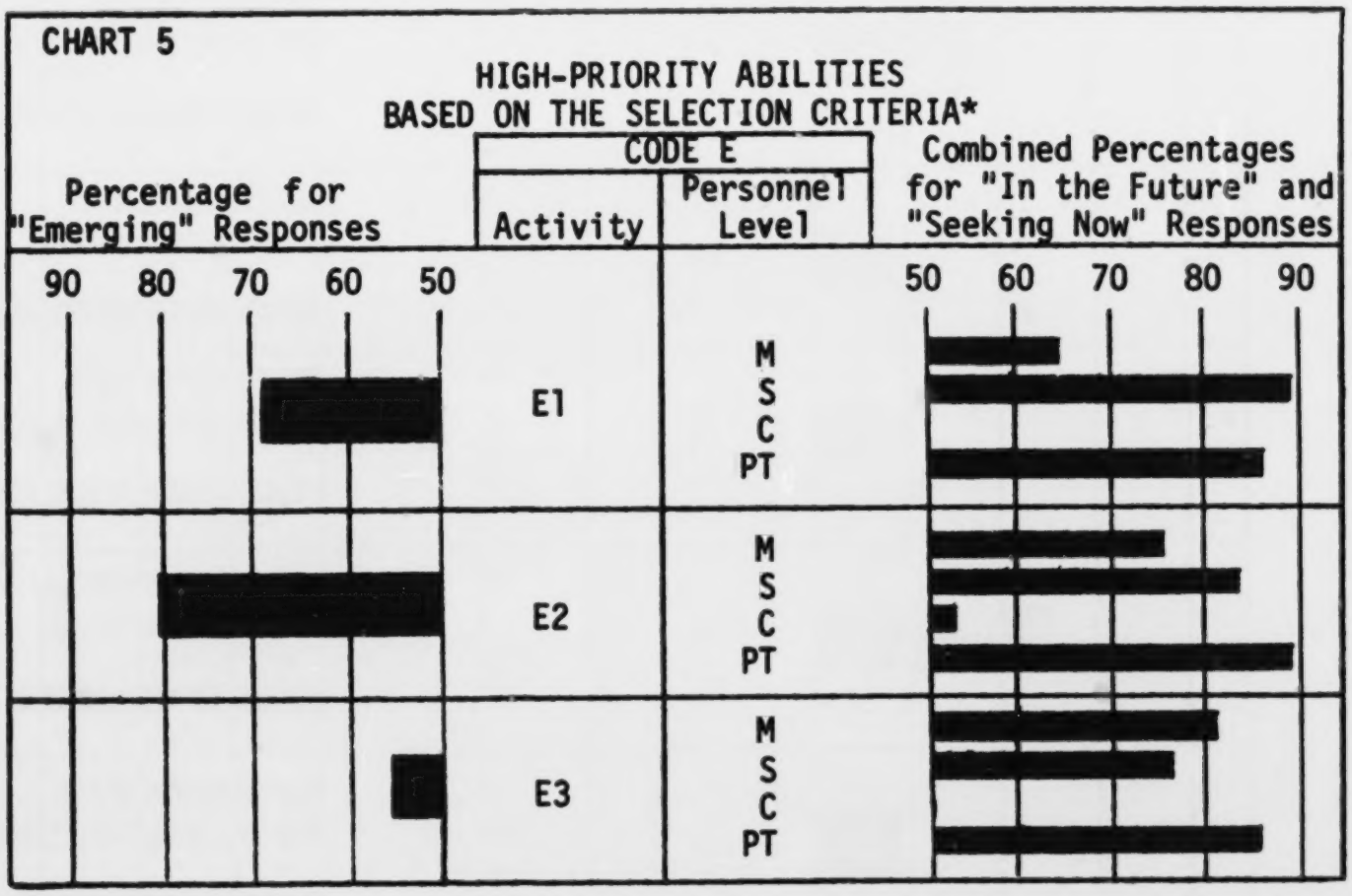
Activity Code	Reason for Rejection
D2	Below 50 percent on Emerging
D3	Below 50 percent on Emerging

Code E--Communications, Written and Graphic. The three activities in Code E are concerned with the employee's ability to summarize information systems output, to make effective use of and communicate via data communication devices, and to communicate research study findings.

Chart 5 illustrates how activities E1, E2, and E3 meet the criteria. The respondents were seeking now and in the future management, supervisory, and professional-technical personnel with the abilities to summarize output from information systems for the purpose of presenting management with concise reports (E1), and to interpret and communicate the findings resulting from research studies (E3). The ability to communicate via data communication devices was needed by all levels of personnel (E2).

CHART 5

HIGH-PRIORITY ABILITIES
BASED ON THE SELECTION CRITERIA*



Code F--Systems. The seven activities in Code F are concerned with employee's ability to identify information needs, formulate plans for systems information input and output, conduct cost feasibility studies, originate and implement control activities, and participate in complete systems analysis.

Chart 6 illustrates how activities F1, F2, F3, F4, F5,F6, and F7 meet the criteria. These seven abilities are needed now and in the future by all levels of personnel except clerical.

CHART 6

HIGH-PRIORITY ABILITIES
BASED ON THE SELECTION CRITERIA*

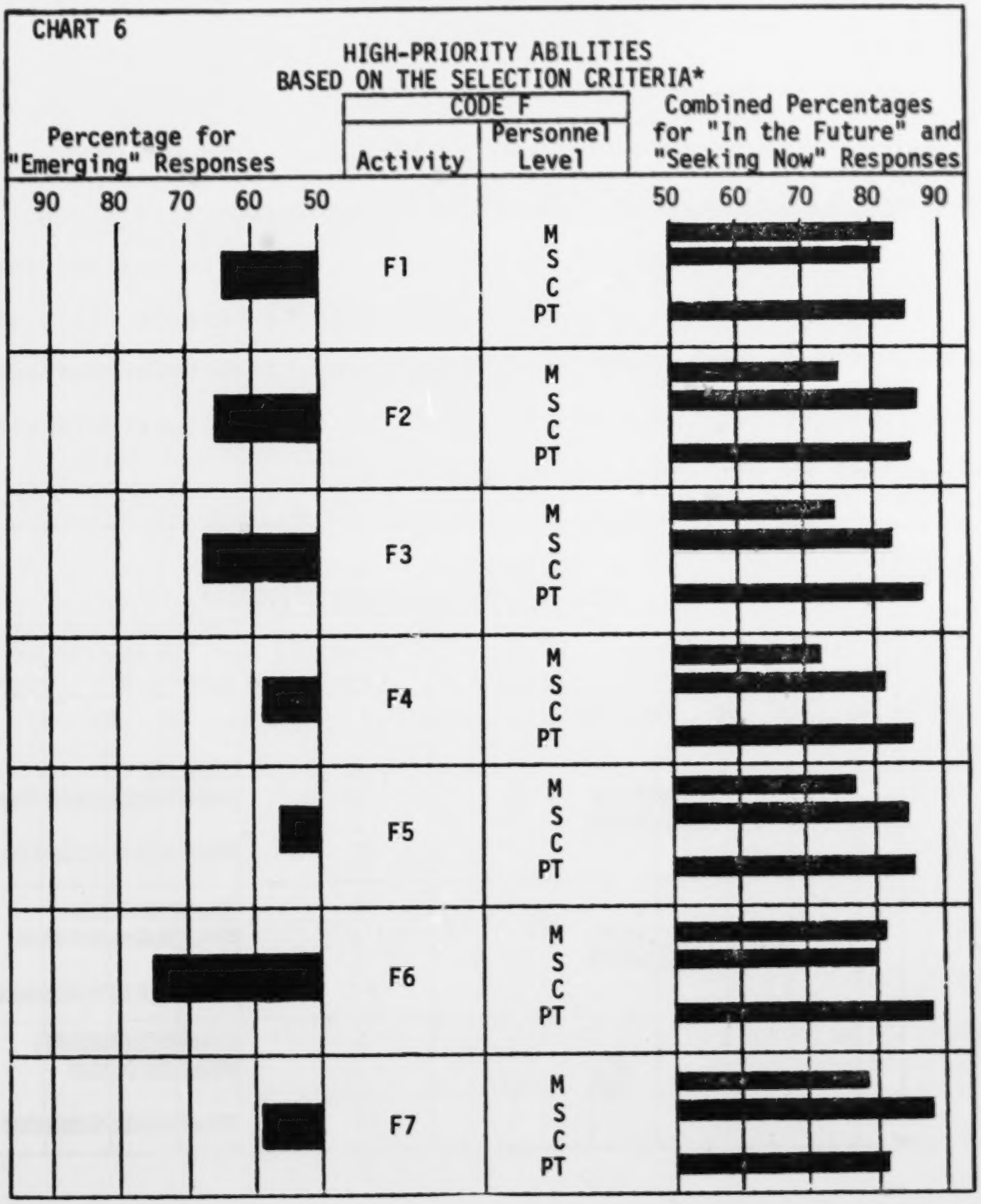
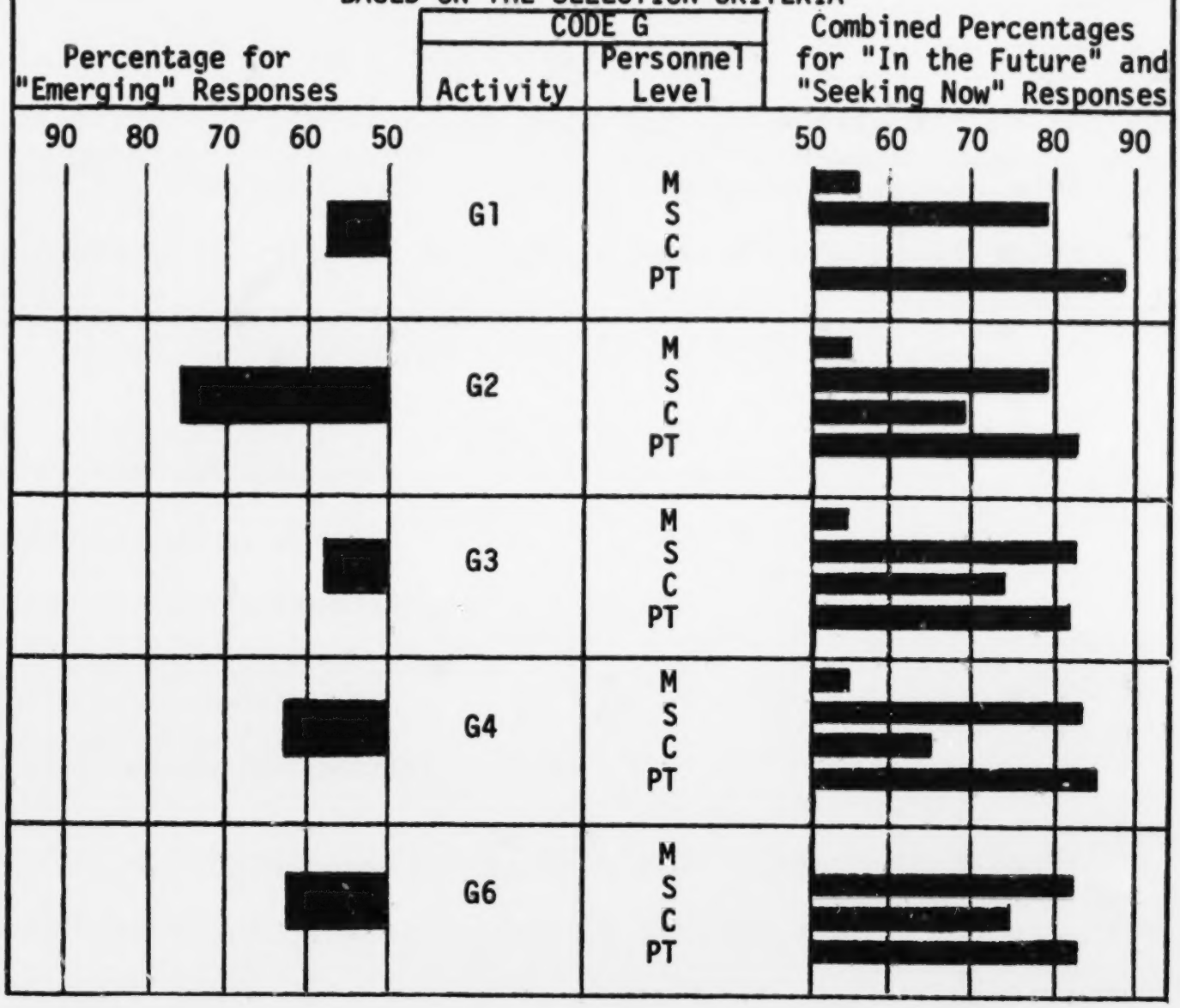


CHART 7

HIGH-PRIORITY ABILITIES
BASED ON THE SELECTION CRITERIA*



Code G--Technology. Chart 7 illustrates how activities G1, G2, G3, G4, and G6 meet the criteria. It was found that the ability to construct basic flowcharts for planning, analyzing, implementing, controlling, and budgeting were needed by the management, supervisory, and professional-technical personnel (G1), but not by clerical personnel. However, all levels of personnel should have the abilities to: input data in an on-line, real-time system to obtain information for report preparation, office work production, and exception reporting (G2); review information systems output to determine if there are errors (G3); and determine what happened to produce the results in an

information system and to provide corrections of data, if needed (G4). The ability to utilize contemporary storage techniques include microfilm, microfiche, operation cards, etc., including indexing and operating the system was believed to be needed for all levels of personnel except management (G6).

Activities G5, G7, and G8 did not meet the proposed criteria established for selection into the high-priority list as explained below:

Activity Code	Reason for Rejection
G5	Below 50 percent on Emerging
G7	Below 50 percent on Emerging
G8	Below 50 percent on Emerging and two significant differences at the .05 level among organizational chi square analyses.

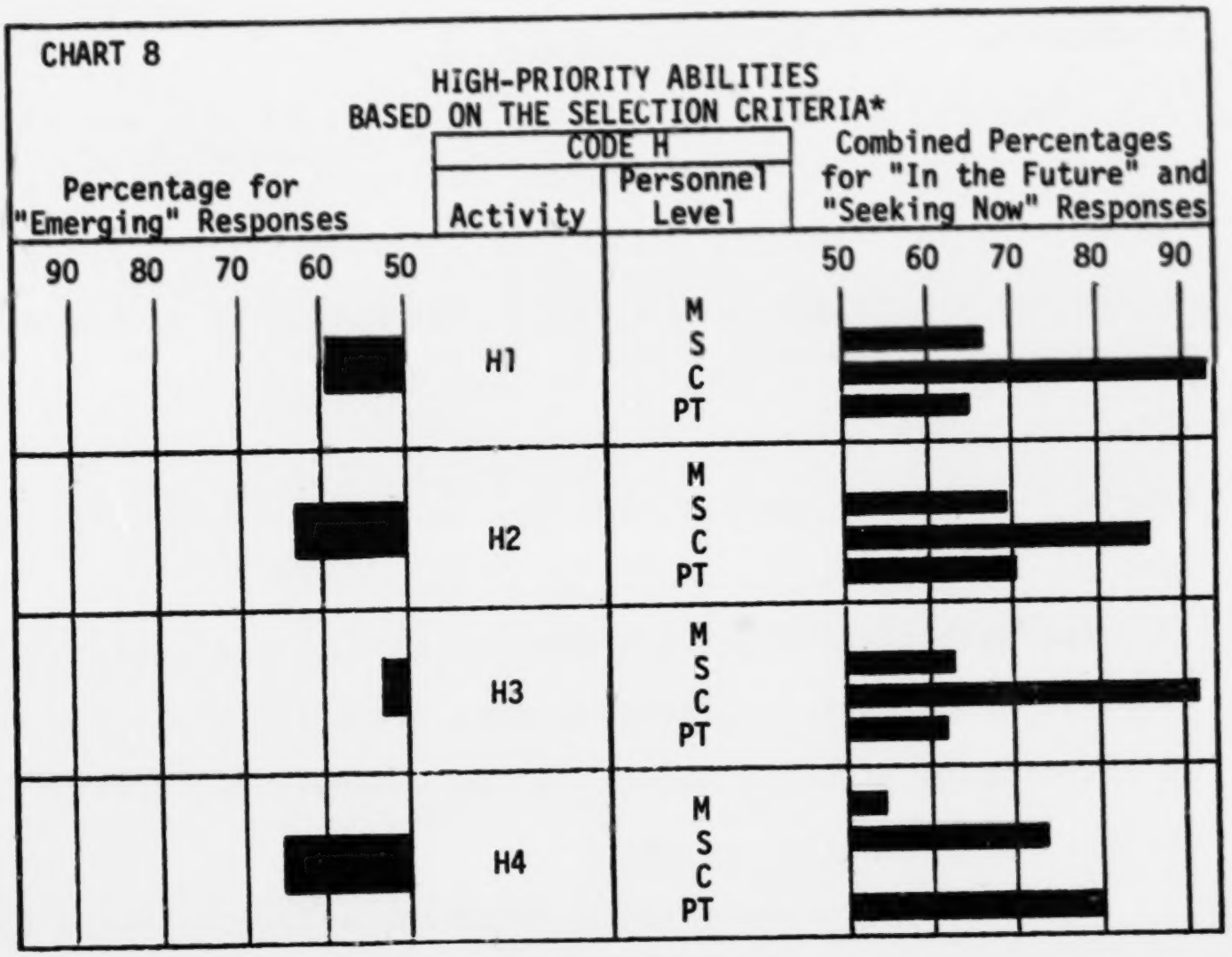
Code H--Hardware. The five activities in Code H are concerned with the employee's ability to self-instruct on new equipment operational techniques, operate microfilm and microfiche equipment as well as computer data manipulation devices, analyze functions and capabilities of data copying and reproduction equipment, and prepare documents and visual aids for color reproducing equipment.

Chart 8 illustrates how activities H1, H2, H3, and H4 meet the criteria. Supervisory, clerical, and professional-technical personnel are needed who possess the abilities to: operate various pieces and new equipment through self-instruction or in-service training (H1), operate various computer data manipulation devices (H2), and operate microfilm and microfiche equipment (H3). Moreover, the ability to ascertain and analyze the capability and functions of copying machines,

data reproduction equipment, and data display terminals are needed now and in the future for the management, supervisory and professional-technical levels of personnel (H4), but not by clerical personnel.

CHART 8

HIGH-PRIORITY ABILITIES
BASED ON THE SELECTION CRITERIA*



Activity H5 did not meet the proposed criteria established for selection into the high-priority list.

Activity Code	Reason for Rejection
H5	Below 50 percent on Emerging

Code I--Software. The four activities in Code I are concerned with the employee's ability to locate and select appropriate information systems services, convert data to coding schemes, write and execute systems programs, and assemble and arrange input data for processing.

Chart 9 illustrates how activities I1, I2, I3, and I4 meet the criteria. Supervisory and professional-technical personnel who have the ability to write and execute information systems programs are needed now and in the future (I1). Moreover, the respondents felt that the management, too, in addition to supervisory and professional-technical level personnel are needed who possess the ability to locate information systems services and to make selections from those that are appropriate (I2).

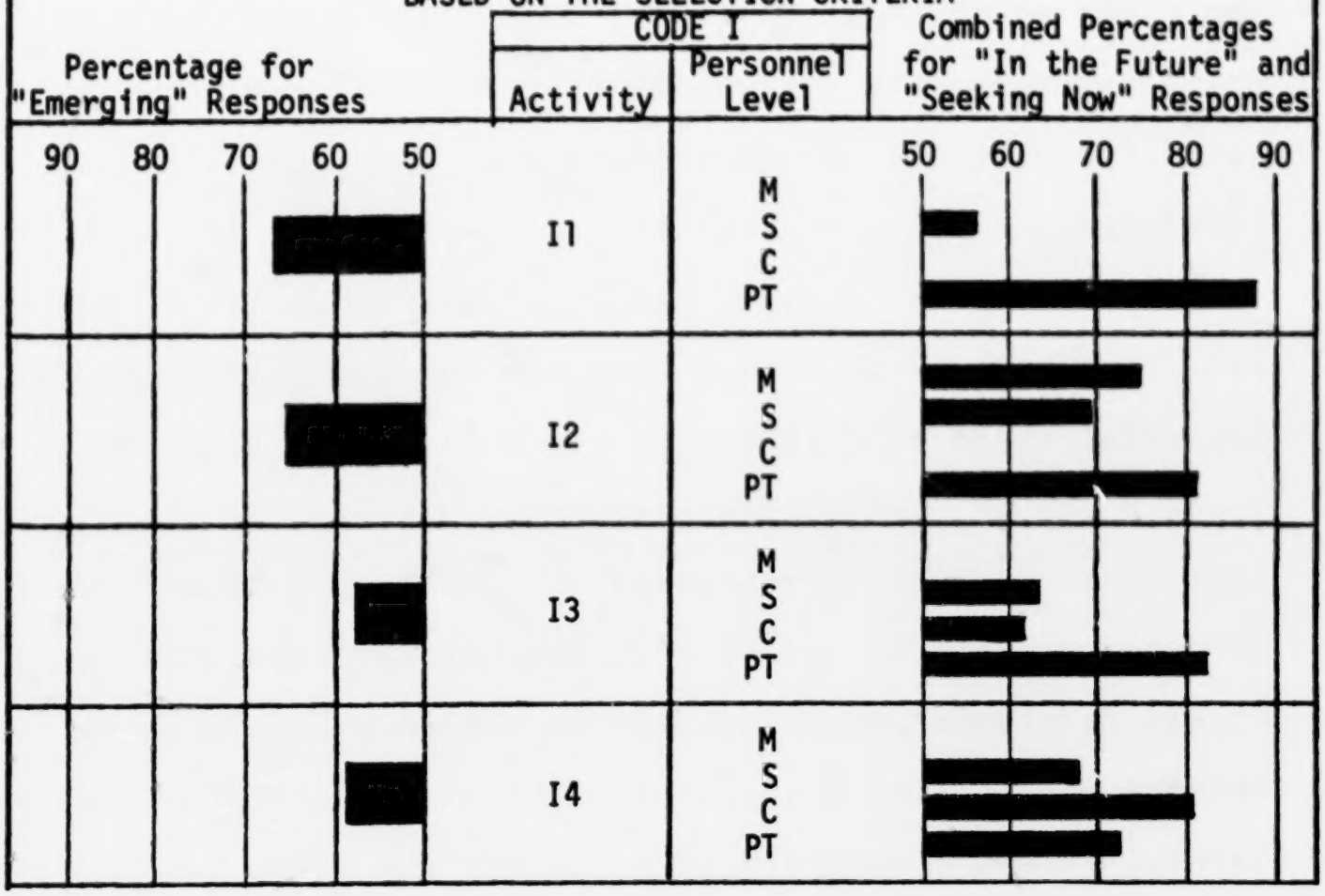
The abilities to convert data to appropriate coding schemes (I3) and to assemble and arrange data for processing (I4) were rated by respondents as being needed by the supervisory, clerical, and professional-technical personnel.

The nine charts have illustrated the abilities rated by respondents as being high priority and the specific levels of personnel for which the abilities are currently needed and needed in the future.

The succeeding section illustrates a proposed curricula into which these abilities could be incorporated.

CHART 9

HIGH-PRIORITY ABILITIES
BASED ON THE SELECTION CRITERIA*



CONCLUSIONS

Preparation of employees for the emergent office should include training for the final 30 high-priority abilities. Therefore, the list of abilities was analyzed to determine the ones that were common or basic to all four levels of personnel. At the same time, additional abilities required for preparation of supervisory and professional-technical personnel were determined.

A summary classification was prepared to assist in the analysis process, and it appears in Table 9. The 30 high-priority abilities were classified into one or more different personnel levels by five degrees of priority depending upon the percent of response for the activities. These five "deg.ees of priority" categories were utilized in the analysis to show the reader how the activity codes could be classified according to varying percents of response.

The data in the column headed 50/50 in Table 9 (appearing to the right of the Activity Code) were used as the basis for determining abilities common to all levels of personnel and the additional abilities required for the supervisory and professional-technical personnel. The heading 50/50 is interpreted as follows: 50 percent or more of the respondents believed that the activity was emerging, and 50 percent or more also were seeking now and in the future personnel capable of performing such an activity. Columns 60/60 and so on could be used if the acceptance were set at a higher level. Only level 50/50 was considered in this study. When an activity code had a check in the 50/50 column beneath each personnel level, it was considered to be an ability common or basic to all four levels. When an ability contained a check beneath two of the four personnel levels, it was considered to be common for these two levels. The same interpretation would also be used for other combinations of commonality.

The preceding analysis process was used for all 30 high-priority abilities. As a result of the analysis, three program sequences were proposed that would provide introduction of the high-priority abilities into the training for the preparation of various levels of personnel.

Table 10 lists nine high-priority abilities proposed for preparation of all four levels of personnel. These abilities are the ones that respondents felt were needed now and in the future by the management, supervisory, clerical, and professional-technical personnel.

TABLE 9. SUMMARY CLASSIFICATION OF THE HIGH-PRIORITY ABILITIES INTO VARIOUS DEGREES OF PRIORITY.

Activity Code	Personnel Levels Needing the Ability by Degrees of Priority																			
	50/50*				60/60				70/70				80/80				90/90			
	M	S	C	PT	M	S	C	PT	M	S	C	PT	M	S	C	PT	M	S	C	PT
A1	x	x	x	x	x	x	x	x												
B2	x	x	x	x	x	x	x	x	x	x	x	x								
B4	x	x	x	x	x	x	x	x												
C1	x	x		x																
C2	x	x		x	x	x		x	x	x		x								
C3	x	x	x	x	x	x	x	x												
D1	x	x	x	x	x	x	x	x												
E1	x	x		x	x	x		x												
E2	x	x	x	x	x	x		x	x	x		x		x		x				
E3	x	x		x																
F1	x	x		x	x	x		x												
F2	x	x		x	x	x		x												
F3	x	x		x	x	x		x												
F4	x	x		x																
F5	x	x		x																
F6	x	x		x	x	x		x	x	x		x								
F7	x	x		x																

*The first number to the left of the diagonal means that the ability received a percentage response for "Emerging" equal to or greater than the designated percent. The second number to the right of the diagonal means that the combined totals for "In the Future" and "Seeking Now" responses for each personnel level are equal to or greater than the designated percent.

TABLE 9 (continued)

Activity Code	Personnel Levels Needing the Ability by Degrees of Priority																			
	50/50*				60/60				70/70				80/80				90/90			
	M	S	C	PT	M	S	C	PT	M	S	C	PT	M	S	C	PT	M	S	C	PT
G1	x	x		x																
G2	x	x	x	x		x	x	x		x		x								
G3	x	x	x	x																
G4	x	x	x	x		x	x	x												
G6		x	x	x		x	x	x												
H1		x	x	x																
H2		x	x	x		x	x	x												
H3		x	x	x																
H4	x	x		x		x		x												
I1		x		x				x												
I2	x	x		x	x	x		x												
I3		x	x	x																
I4		x	x	x																

Table 11 lists six high-priority abilities proposed for preparation of three levels of office personnel. These high-priority abilities are the ones that were common to supervisory, clerical, and professional-technical office personnel.

Table 12 shows fifteen high-priority abilities proposed for preparation of management, supervisory, and professional-technical personnel. One of these high-priority abilities was common to the supervisory and professional-technical personnel only.

All persons preparing for positions in the emergent office would thus receive training for the abilities outlined in Table 10. This would be followed by training for the abilities in Table 11 for supervisory, clerical, and professional-technical personnel. Thereafter, the training for the abilities in Table 12 would be provided for management, supervisory, and professional-technical personnel. It is possible that each person's training program may vary somewhat depending upon his specific objectives, goals, and personnel level sought. Also, it is possible that each student may pursue training for an ability with varying degrees of mastery depending again upon how he intends to utilize it. The training in these abilities for the emergent office will, of course, be in addition to those required for preparation of personnel for the current office.

TABLE 10. HIGH-PRIORITY ABILITIES COMMON TO ALL LEVELS OF OFFICE PERSONNEL.

High-Priority Emerging Ability	Ability Common to This Level of Personnel			
	Manage-ment	Super-visory	Cleri-cal	Prof.-Tech.
A1--Ability to comprehend and conceptualize the system of the organiz-tion or unit as a vast network or information flow and to under-stand as an employee one's position in the operation of the system.	x	x	x	x
B2--Ability to adjust quickly to new equipment, procedures, and work sequences brought about by rapid technological changes for the purpose of updating skills, increasing individual productive capacity, and raising company output.	x	x	x	x
B4--Ability to perform adequately in one system, switch to another system and perform adequately, and then switch back and perform adequately again. (Total job flexibility)	x	x	x	x
C3--Ability to recognize how inaccurate data entering a system may affect outcomes on succeeding jobs.	x	x	x	x
D1--Ability to gain rapport with all racial groups.	x	x	x	x
E2--Ability to communicate via data communication devices and to know the limitations, methods of utilization, and choose from available equipment for particular operations.	x	x	x	x
G2--Ability to input data in an on-line real-time system to obtain information for report preparation, office work production, and exception reporting.	x	x	x	x
G3--Ability to review information systems output to determine if there are errors.	x	x	x	x
G4--Ability to determine what happened to produce the results in an information system and to provide corrections of data, if needed.	x	x	x	x

TABLE 11. HIGH-PRIORITY ABILITIES COMMON TO SUPERVISORY, CLERICAL, AND PROFESSIONAL-TECHNICAL OFFICE PERSONNEL.

High-Priority Emerging Ability	Ability Common to This Level of Personnel			
	Management	Supervisory	Clerical	Prof.-Tech.
G6--Ability to utilize contemporary record storage techniques including microfilm, microfiche, aperture cards, etc., including indexing and operating the system.		x	x	x
H1--Ability to operate various pieces of new equipment through self-instruction or in-service training. (MTST, Electronic Calculator, ATS, etc.)		x	x	x
H2--Ability to operate various computer data manipulation devices. (Input, Output, Storage, and Retrieval)		x	x	x
H3--Ability to operate microfilm and microfiche equipment.		x	x	x
I3--Ability to convert data to appropriate coding schemes.		x	x	x
I4--Ability to assemble and arrange input data for processing.		x	x	x

TABLE 12. HIGH-PRIORITY ABILITIES COMMON TO MANAGEMENT, SUPERVISORY, AND PROFESSIONAL-TECHNICAL OFFICE PERSONNEL.

High-Priority Emerging Ability	Ability Common to This Level of Personnel			
	Management	Supervisory	Clerical	Prof.-Tech.
I1--Ability to write and execute information systems programs.		x		x*
C1--Ability to analyze the needs, attitudes, motivations, and actions of others to facilitate the desired outcomes.	x	x		x
C2--Ability to interface between management and informational systems personnel.	x	x		x
E1--Ability to summarize output from information systems for the purpose of presenting management with concise reports.	x	x		x
E3--Ability to interpret and communicate the findings resulting from research studies.	x	x		x
F1--Ability to identify and select among a number of alternate combinations of equipment, procedures, and people for that combination which best accomplishes a certain established objective, purpose, or goal according to certain criteria.	x	x		x
F2--Ability to identify information needed by management for decision-making purposes.	x	x		x
F3--Ability to formulate plans for collection, processing, storage, and retrieval of information to meet the needs of the organization.	x	x		x
F4--Ability to contribute to or conduct a feasibility study.	x	x		x
F5--Ability to contribute to or conduct cost effectiveness studies.	x	x		x
F6--Ability to ascertain what information should be programmed into an integrated information system.	x	x		x
F7--Ability to formulate standards, to measure performance, and to implement control activities, comparing results with expectations and reporting exceptions.	x	x		x
G1--Ability to construct basic flowcharts for projects, systems, or subsystems for purposes of planning, analyzing, implementing, controlling, and budgeting.	x	x		x
H4--Ability to ascertain and analyze the capabilities and functions of copying machines, data reproduction equipment, and data display terminals.	x	x		x
I2--Ability to locate information systems services and to select those that are appropriate.	x	x		x

*Common only to Supervisory and Professional-Technical Personnel.

PART III DEVELOPMENT OF PERFORMANCE GOALS FROM THE HIGH-PRIORITY ABILITIES

Part III discusses the manner in which abilities needed for the emergent office can be incorporated in the business education curriculum.

RATIONALE AND RELATED STUDIES

A number of questions confront the business teacher today.

How can he apply the new educational technology to the development of instructional objectives? How can he become more certain than in the past that his students will reach enough of these objectives to be satisfactorily employed? How can he be accountable for what he promises in his objectives? The answer: through performance goals.

How can the teacher enable the business student to take an active part in selecting objectives that he wants and needs to achieve? How can the student decide whether he wants to aim toward the goal to which the teacher is directing him? And how can the teacher help the student decide whether he is satisfactorily progressing? The answer: through performance goals.

Performance goals are not new. Some people call them behavioral objectives. In fact, business teachers and those in charge of industrial and military training programs have long used them. But, a system for writing them has not been available. In other words, the new technology of systems development has not been applied to performance goals.

The preparation of performance goals stated in behavioral terms assist the teacher and student in establishing objectives to make the subject relevant to the lives of the student. How? Performance

goals deal with the practical application of the subject matter taught. They are based on how the student performs both at the beginning of the job and as he advances in his career. Performance goals precisely describe in educational language duties of a data typist, payroll supervisor, receptionist, information retrieval clerk, assistant systems analyst, assistant office supervisor or manager, computer console operator, or secretary.

Performance goals are stated so the teacher and student understand them and how they relate to career objectives.

Characteristics of Performance Goals

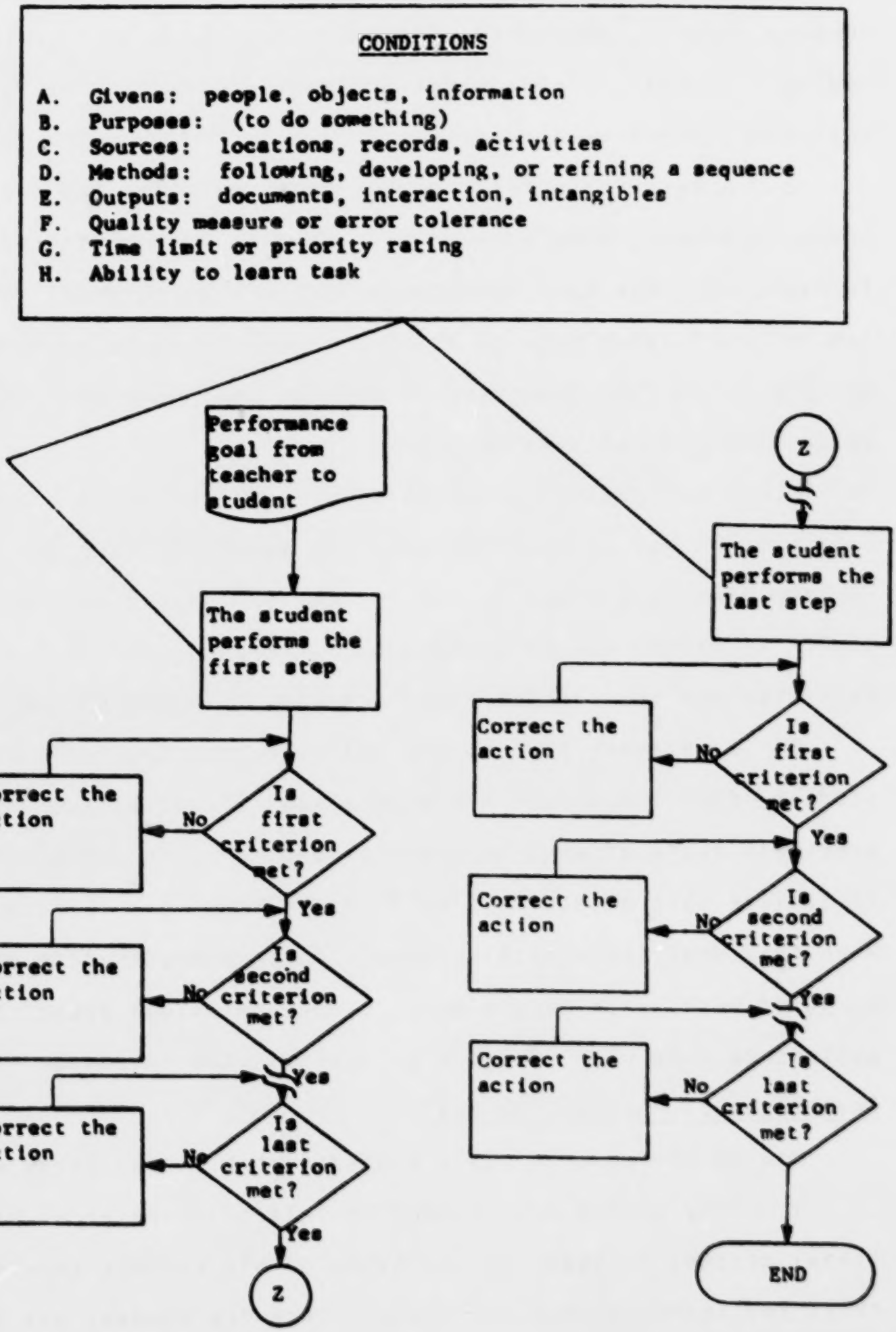
To facilitate understanding, performance goals should have five characteristics: (See the flowchart on page 73.)

1. A description of a performance is stated behaviorally in concrete terms to demonstrate that which is measurable and observable (including tolerance levels). Verbs of action are important such as "proofread a report," "gather reference materials," "design a form," "preview coding scheme," or "greet patron." In addition, tolerance levels of performance reduce the vulnerability to subjective judgment in measuring success. The report, for example, should contain no errors in the amounts of money; or the secretary should find what is required in the reference materials.

2. A description of a performance specifies most conditions under which the performance will take place. Thus, stipulations, provisions, requisites are appropriate that typically are used to describe and define the methods, materials, machines, equipment, and supplies in performing various tasks. Conditions, for example, will describe the report: how many pages or whether it is statistical.

CHART 10

FLOWCHART REPRESENTATION OF A TYPICAL PERFORMANCE GOAL



The reference materials: are they handbooks, dictionaries, atlases, company reports, journals? The form: outgoing or in house? The coding: numeric, alpha, alpha-numeric? An emotion or feeling: resistant, negative, cooperative?

3. A description of a performance specifies the steps in proper sequence, when appropriate, that occur when the performance is executed. How does the person decide when to start doing the job or task? What does he do first? What does he do second? If his job is to find something to repair, what does he look for? Which alternatives does he try?

4. A universally understood performance goal will permit another or a new teacher to take the goal and teach the same things, reaching for the same objective, as the teacher who last used the performance goal. A teacher who is successful in helping students master an objective can thus assist other teachers in becoming successful.

5. A relevant performance goal should effectively motivate a student, for it provides him with a specific objective and makes him precisely aware of what he needs to add to his knowledge and skills to achieve that objective. Performance goals are relevant to life when they describe something people do in everyday life or the world of work, what people have to make decisions about, or what actions to take when emotions or feelings are involved.

Advantages of Performance Goals

How do performance goals stated in behavioral terms work?

1. They permit any student to select the material or instructional content he needs on the basis of his present knowledge and skill for learning each new topic. Once the student has the goal in

mind he, more than any other person, is likely to know what he already can do and what he can't do. He may want a textbook to read. He may have some specific questions to ask. He may want to look the situation over, talk with an employee, try it out. He may want assistance in gaining confidence.

2. They permit educational objectives and tests or examinations to be precisely correlated. Thus, the student will be taught information that relates specifically to the task for which he is being trained. In fact, from the students' standpoint, performance goals tell him exactly how he will be tested, what kinds of paper-pencil items, what kind of performance tests.

3. They permit the development of well-defined short learning sequences and curriculum, and identifiable conditions of learning, as well as clearly defined relevant goals, opportunity to achieve, and unambiguous evaluation stated in performance terms. As far as the student is concerned, not only does he have objectives he can understand but also a program of learning that helps him achieve and prepare for tests: paper-pencil tests, performance measures, or attitude scales.

4. They permit the student to be given the task of learning something he does not know. He is not forced to repeat that which he already knows. They allow the student to begin at the logical place to best advance his individual knowledge of a situation, and relate it to existing job entry requirements and behavior. Learning is no longer a battle or game between the teacher and the student, each trying to outguess the other. Learning is in the hands of the

student after he and the teacher select an appropriate performance goal. The motivation for achievement on the part of the student depends on the selection of a performance goal that is relevant, achievable, and measurable.

Some Questions About Performance Goals

Can explorative and creative behavior be written in performance statements? Can human understanding be described behaviorally? How many performance goals are to be written? While these problems turn out to be extremely complicated, educators should not give up on account of their complexity. President Nixon in his special message on education reform urged attention to them when he said:

> "The National Institute of Education would take the lead in developing new measurements of educational output. In doing so it should pay as much heed to what are called the 'immeasurables' of schooling (largely because no one has yet learned to measure them), such as responsibility, wit, and humanity as it does to verbal and mathematical achievement."[1]

The challenge to business educators, and to all educators, is to begin the task of writing performance goals that contain elements of creative behavior, attitudes, and learning to learn. The task of writing a sufficient number of performance goals may require effort on the part of a large number for a long time. But as President Nixon implies, no one has tried.

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[1]Nixon, Richard M., "President Nixon on Education," The Wall Street Journal, Vol. LXXXII, No. 44, p. 10, March 5, 1970.

Delimitations

Two delimitations affected the outcomes of the project described in Part III. First, as is true of many projects, the project was limited by time and budget constraints. As the project developed, it was discovered that the magnitude and complexity of both discovering emerging office activities and writing performance goals for them was considerable. Since the project was limited to a time assignment of July 1, 1968, to September 1, 1969, it was necessary to start the performance goal development before the data were gathered and analyzed. Second, the manpower budgeted allowed only for limited attention to writing performance goals. As the project developed it was discovered that a full-time staff member with the assistance of a consultant group could write in one week only the performance goals for one item on the questionnaire. It soon became evident that performance goals for only a small number of the 41 items on the questionnaire would be possible.

PROCEDURES AND DESIGN

In order to produce performance goals from the activities identified in Part II, it was necessary to find suitable models and methods. Fortunately, another concurrent project that had the purpose of producing prototypes of performance goals was in progress.[1] These models and methods were adopted in this project and are explained and illustrated later. Thus the basic procedure was to start with

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[1]Huffman and Byers, Op. Cit.

each of the abilities needed for the emergent office resulting from Part II of this project and then to write performance goals. Other procedures include the use of a group of expert consultants composed of university, college, and high school teachers for constructing, revising, modifying, and refining performance goals.

Three teams worked on the project. During January through March, 1969, a Colorado State University team began the development; during April through May, 1969, the team was directed by Dr. Catherine Jones, on leave from the University of Oregon; and during June through August, 1969, the team was reconstituted with high school and college teachers who were in graduate study at Colorado State University.

ANALYSIS OF RESULTS

As will be seen in Part IV of this report, 18 sets of performance goals for the emergent office were developed. An analysis of the experience of developing these 18 sets and the sets themselves resulted in a plan of development and a generalized model of performance goals for the emergent office.

The Generalized Model

A possible source for writing performance goals would be the expert knowledge of employed office workers who are both efficient and articulate. As experts they would have perspective of how they arrived where they are and what the future might bring. However, if business educators cannot find such persons, they must then turn to occupational analysis.

The model for developing performance goals contains eight steps.

Step one: Obtain Occupational Analysis

In order to generate a particular set of performance goals, it is necessary to have a source and an orientation. The source and orientation results from occupational or job analysis. Analysis ". . . is a technique by means of which the essential elements of an occupation, or any part of an occupation or activity, are identified and listed for instructional purposes."[1] Thus, the basis for performance goals ". . . is determined by a job analysis of what the worker must know and be able to do to be successful in the occupation for which he is trained."[2]

Typically the primary source of information for a performance goal writer is firsthand information from the person doing the job itself. This may be obtained by observations of the person at work, interviews with workers and their supervisor, questionnaires to workers and employers, and other job analysis techniques. In addition to the above primary sources, secondary sources could be employed. They include research reports, manuals, periodicals, textbooks, and many other materials already in existence. Once this information is assembled and combined with the primary sources, the context in which the performance goal instruments are to be developed is available. With information from primary and secondary sources and a plan for generating performance goals, it would be possible for the program

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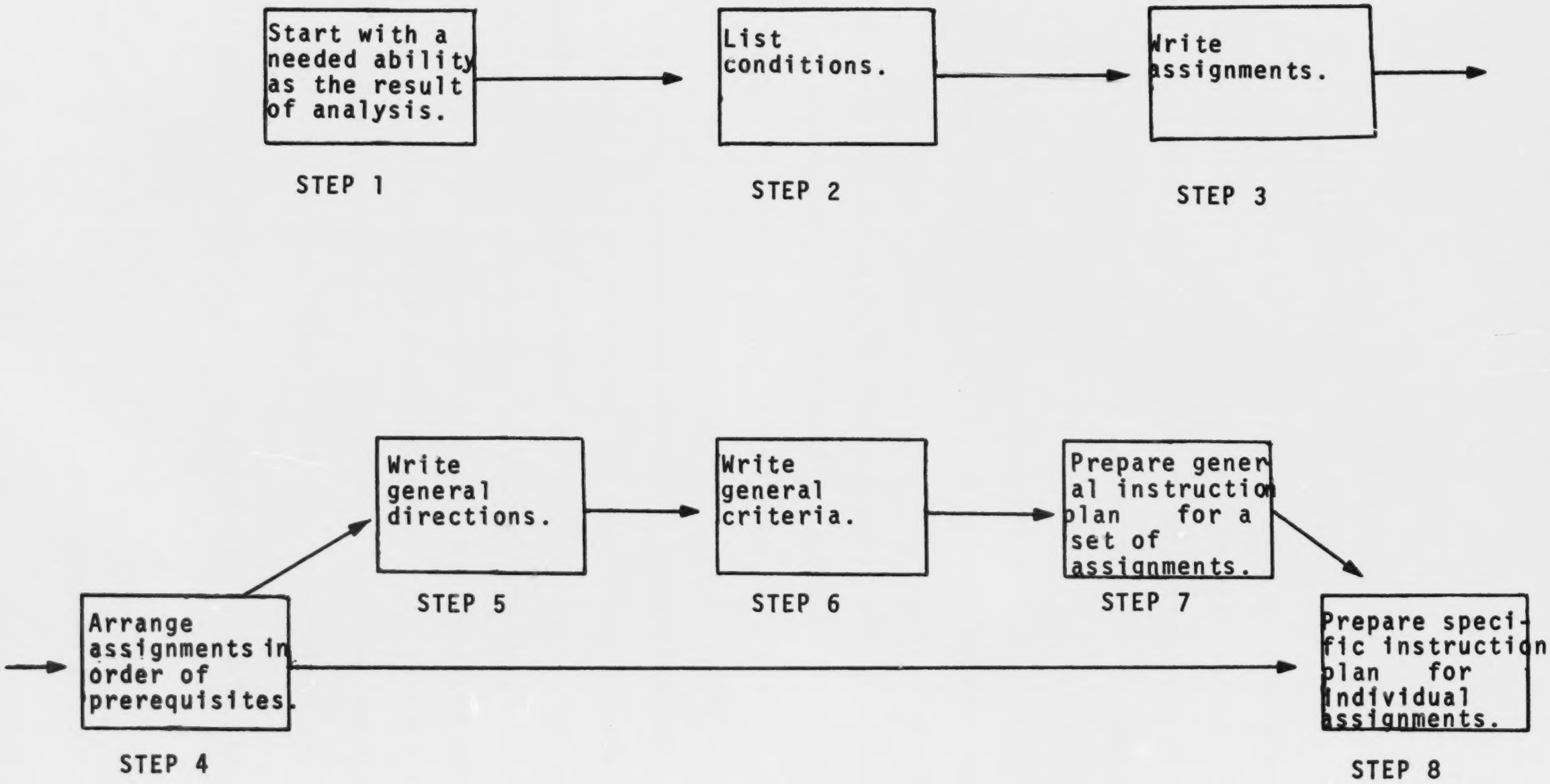
[1]Fryklund, Verne C., Analysis Technique for Instructors, Bruce Publishing Company, Milwaukee, 1965, p. 1.

[2]Larson, Milton E., Review and Synthesis of Research: Analysis for Curriculum Development in Vocational Education, The Center for Vocational and Technical Education, Ohio State University, Columbus, October 1969, p. 4.

CHART 11

Overall Procedure for Preparing Performance Goals



developer to realistically produce performance goal statements that describe both job entry objectives and intermediate educational objectives.

Step two: List Conditions Using Analysis Information

Chart 12 provides an overall picture of the procedure for developing the conditions of performance goal instruments. As can be seen, the conditions are developed from an existing occupational or job analysis. Their development involves eight sub-steps,the first being to list givens, which may be an object, a piece of information, a person, or an intangible situation. Other sub-steps include listing sources of the given, purposes, methods to carry out purposes, outputs, quality measures, time limits, and prerequisite or enabling abilities required to embark on a particular performance goal.

As can be seen, certain conditions may have a number of refinements or clarifications. For example, a given may include details such as physical measurements, descriptive features, or many other refinements.

Chart 13 gives a detailed series of sub-steps for writing the conditions. It is an expansion of Chart 12 and consists of eleven pages, each developing one sub-step at a time. The first page contains above the double lines the first sub-step, "list the givens." Below the double lines are some typical givens,which are examples from the performance goals in Part IV. The second page of Chart 13 illustrates how a condition, in this case a given, is clarified or refined. Again above the double lines are shown the sub-steps of deciding whether refinements are necessary and the development of the refinements, if required. Below the double lines are shown typical refinements of the givens.

CHART 12

Procedure for Developing the Conditions of Performance Goal Instruments

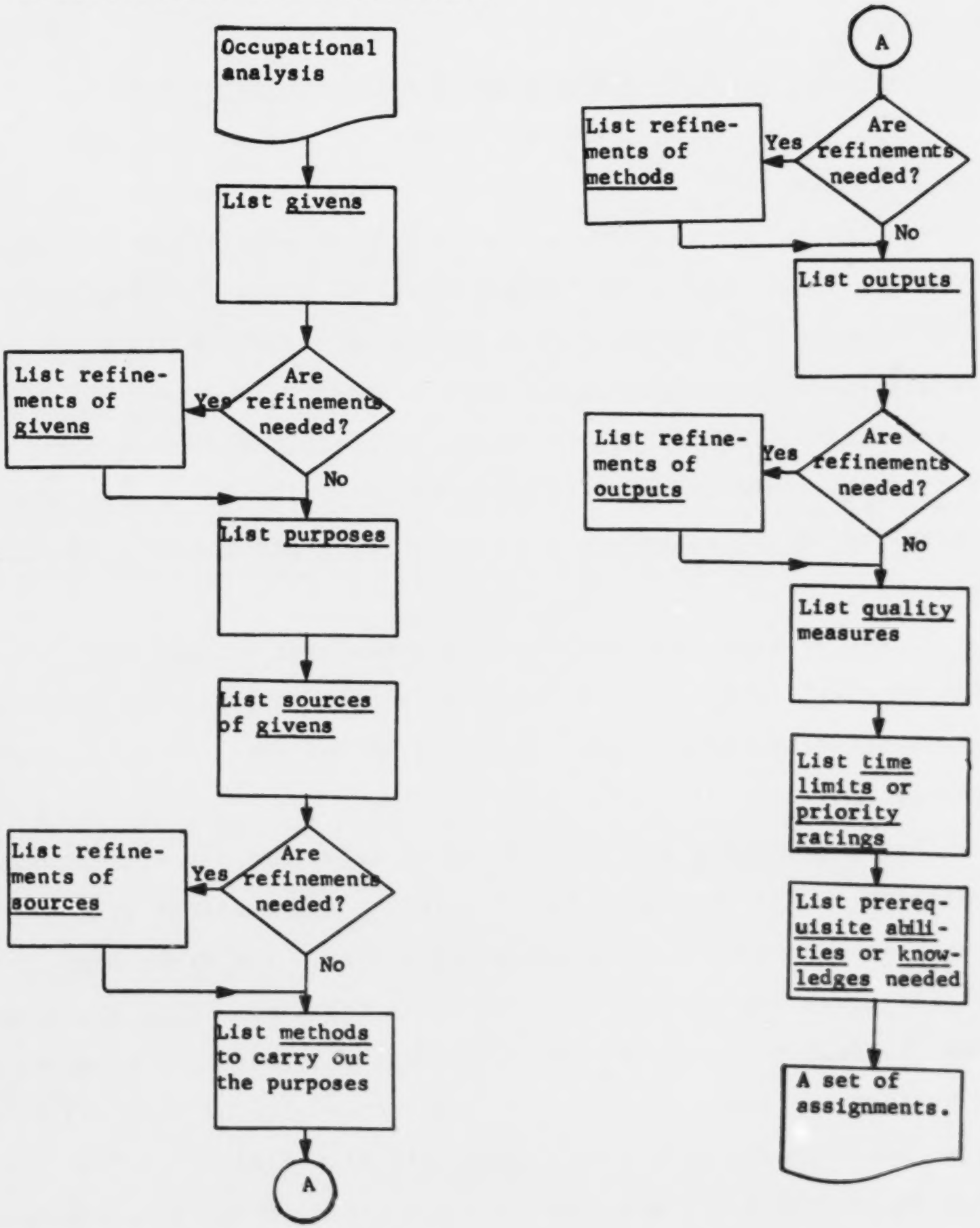
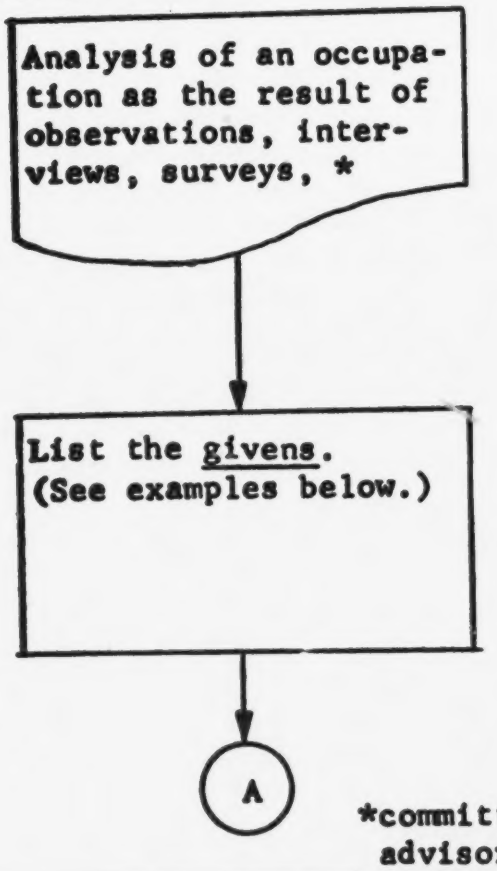


CHART 13

Detailed Procedure for Developing the "Conditions" of Performance Goal Instruments



*committees of vocational educators, advisory committees, etc.

EXAMPLES OF GIVENS

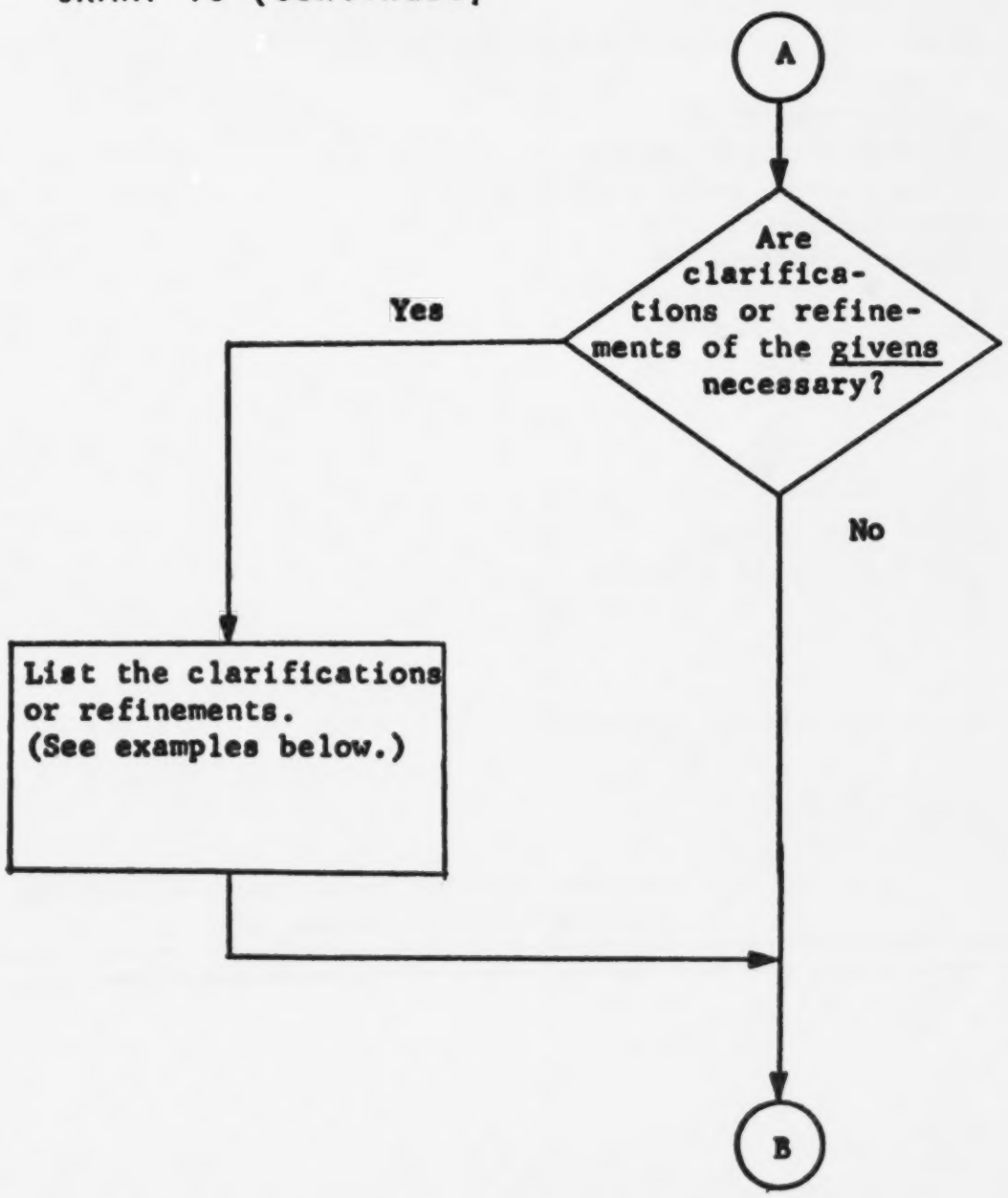
A. Physical Objects
   1. Equipment
   2. Machines
   3. Supplies
   4. Materials
   5. Etc.

B. Recorded Information
   1. Documents
   2. Vouchers
   3. Microfilm
   4. Books
   5. Records
   6. Reports
   7. Tapes
   8. Etc.

C. People
   1. Customer
   2. Employee
   3. Supervisor
   4. Businessman
   5. Etc.

D. Intangibles
   1. Problems
   2. Situations
   3. Requests
   4. System
   5. Etc.

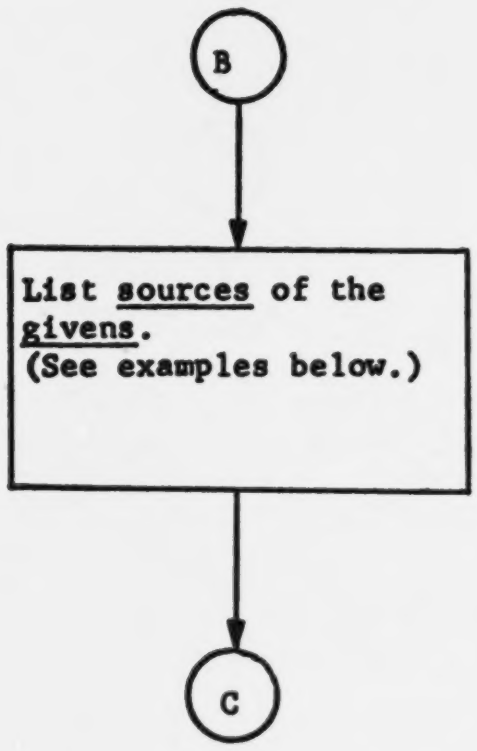
CHART 13 (continued)



CLARIFICATIONS OR REFINEMENTS OF THE "GIVEN"

A. Arrangement, form, working condition, degree of completeness
B. Equipment features (type, attachments, degree of complexity)
C. Number, quantity
D. Supplemental supplies and materials
E. Special instructions
F. Space available
G. Etc.

CHART 13 (continued)



EXAMPLES OF SOURCE OF "GIVEN"

A. Audio or Visual Display
   1. Cathode ray
   2. Records
   3. Films
   4. Charts
   5. Graphs
   6. Etc.

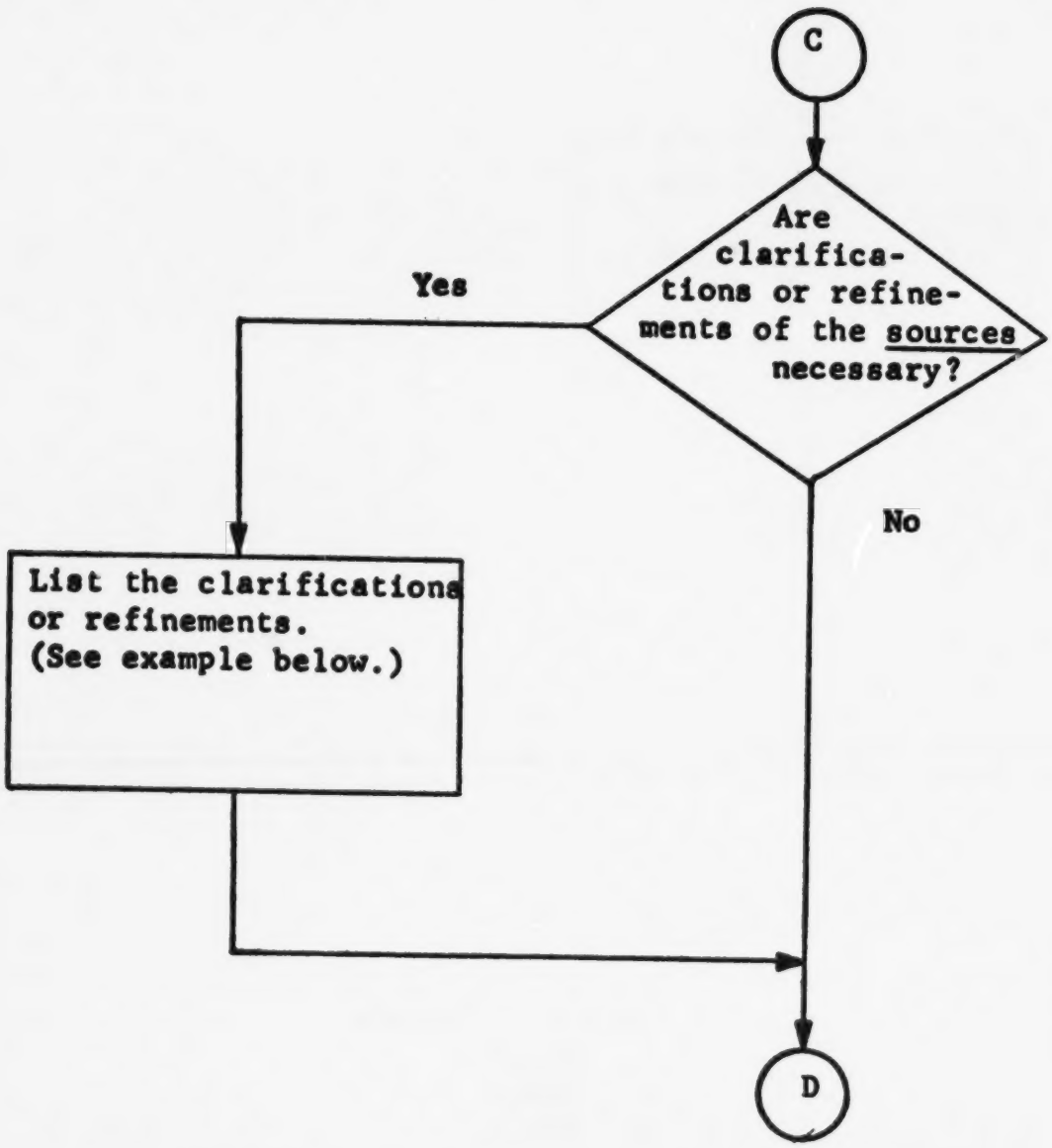
B. Recorded Information
   1. Catalog
   2. Documents
   3. Books
   4. Directories
   5. Periodicals
   6. Data processing input or output
   7. Reports
   8. Mail
   9. Registrations
   10. Etc.

C. Activities
   1. Demonstrations
   2. Dictations
   3. Interviews
   4. Analysis
   5. Conference
   6. Etc.

D. Physical Factors
   1. Weather
   2. Space
   3. Etc.

E. People
   1. Machine operator
   2. Supervisors
   3. Customer
   4. Employees
   5. Businessman
   6. Etc.

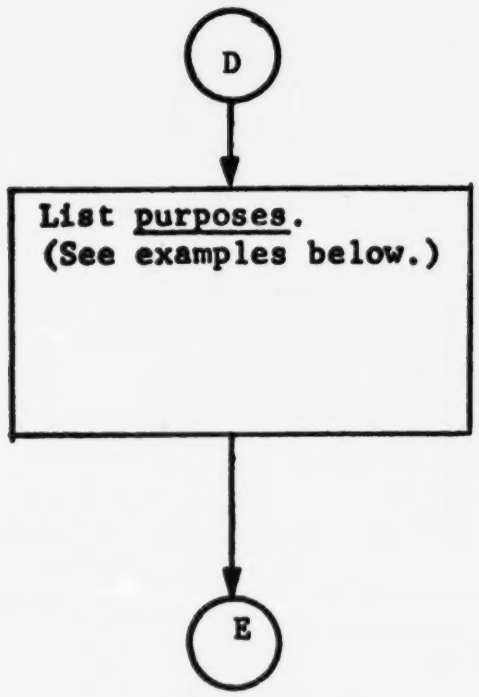
CHART 13 (continued)



CLARIFICATION OR REFINEMENTS OF THE "SOURCE OF THE GIVEN"

A. Location
B. Special instructions
C. Accessibility
D. Etc.

CHART 13 (continued)



EXAMPLES OF PURPOSES (TO DO SOMETHING)

A. Creating or Producing
   1. Documents
   2. Materials
   3. Tapes or film
   4. Etc.

B. Readying (something)
   1. Documents
   2. Materials
   3. Tapes or film
   4. Etc.

C. Operating (carrying out an operation)
   1. Selecting
   2. Collecting
   3. Screening
   4. Storing
   5. Confirming
   6. Adjusting
   7. Recording
   8. Arranging
   9. Testing
   10. Etc.

D. Managing
   1. Classifying
   2. Recommending
   3. Analyzing
   4. Etc.

E. Interacting
   1. Eliciting
   2. Cooperating
   3. Explaining
   4. Etc.

CHART 13 (continued)

EXAMPLES OF METHODS

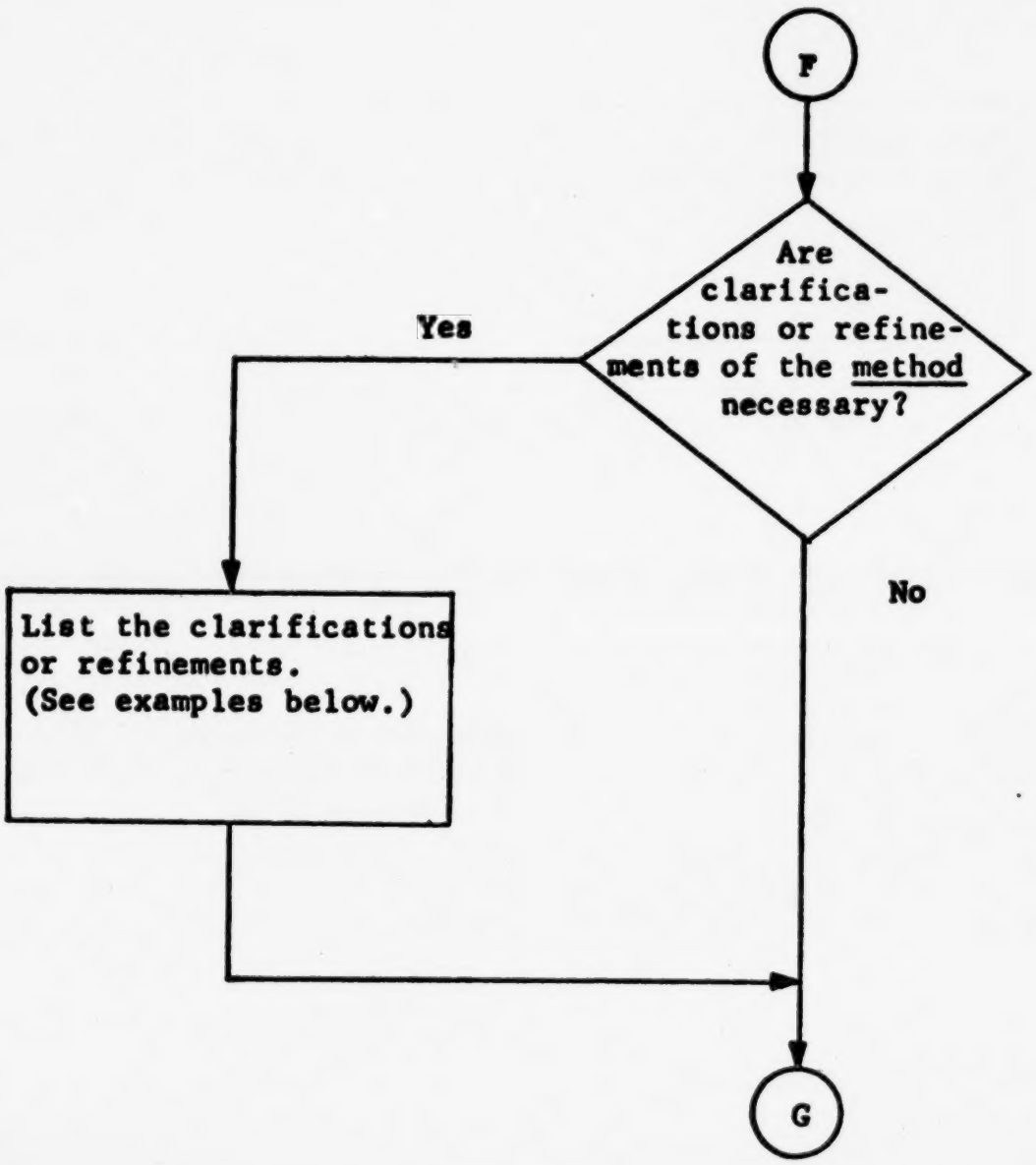
A. Follow a branching or nonbranching sequence of instructions in or from a
   1. Catalog
   2. Report
   3. Manual
   4. Almanac
   5. Handbook
   6. Sketch
   7. Drawing
   8. Oral presentation
   9. Etc.

B. Imitate or follow a branching or nonbranching sequence from a/an
   1. Demonstration
   2. Observation
   3. On-the-job training program
   4. Self-instruction program
   5. Formal instruction
   6. Etc.

C. Employ machinery or equipment
   1. Typewriter
   2. Office Machines
   3. Data processing equipment
   4. Etc.

D. Interaction or eliciting
   1. Questioning or eliciting
   2. Interviewing
   3. Etc.

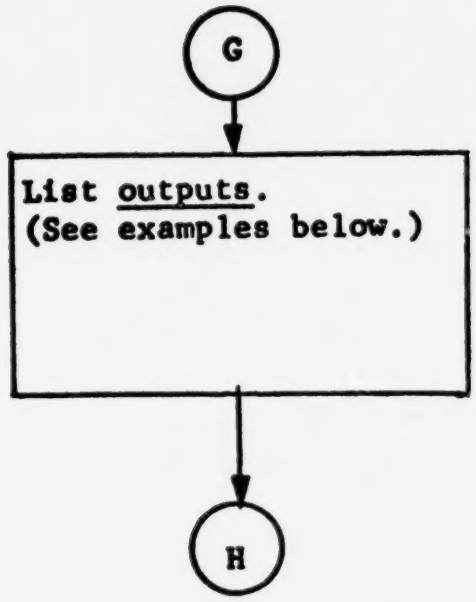
CHART 13 (continued)



CLARIFICATIONS OR REFINEMENTS OF THE METHODS

A. Type of machine controls
B. Supplies
C. Special machines
D. Special instructions
E. Special operations
F. Safety measures
G. Assistance available
H. Etc.

CHART 13 (continued)



EXAMPLES OF OUTPUT

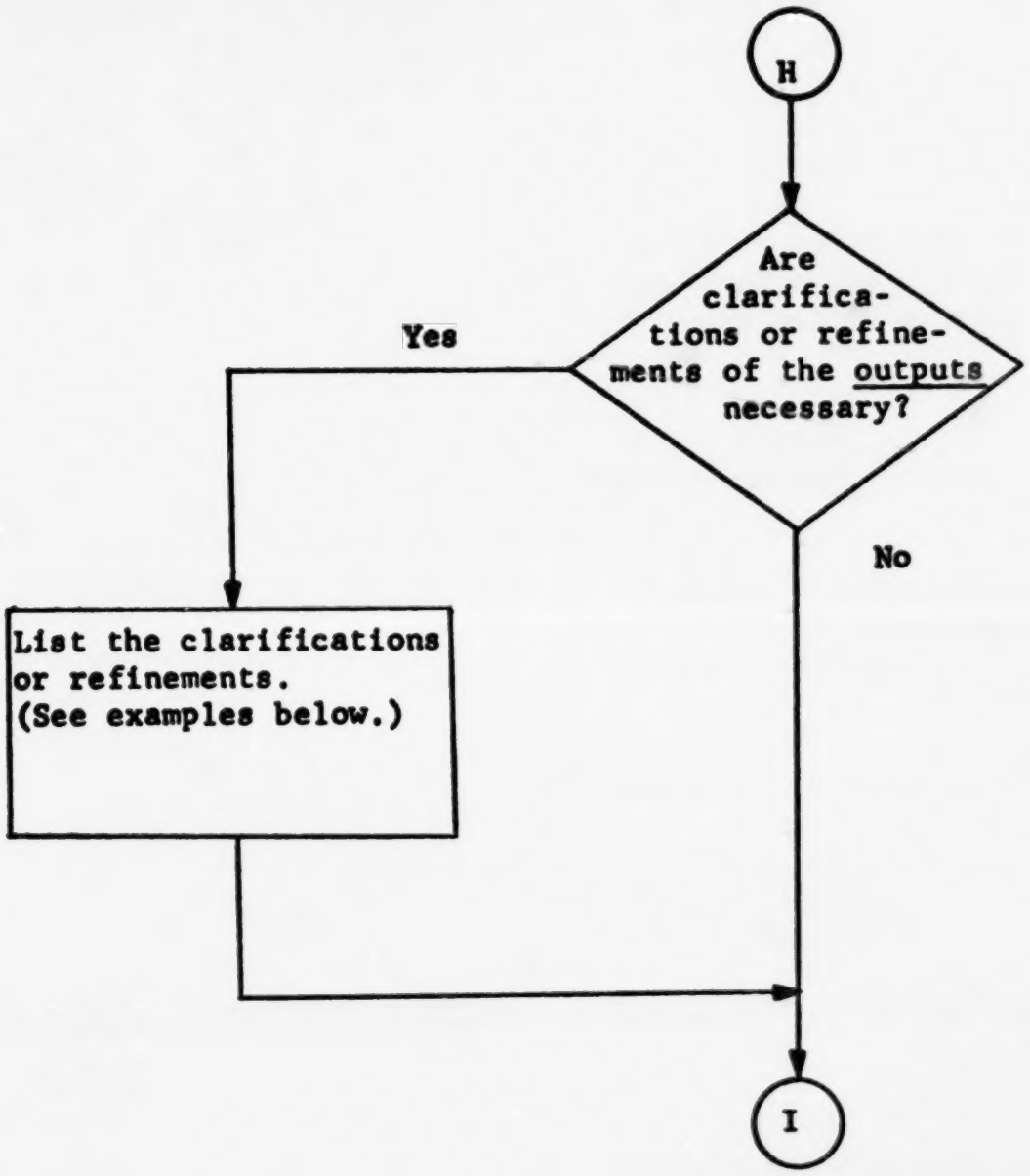
A. Recorded information
   1. Records
   2. Reports
   3. Directory
   4. Periodical
   5. Catalog
   6. Vouchers
   7. Charts
   8. Graphs
   9. Data processing input or output
   10. Documents
   11. Ledgers
   12. Etc.

B. Audio or visual display
   1. Cathode ray
   2. Record
   3. Films and filmstrips
   4. Microfilm or microfiche
   5. Tapes
   6. Transparencies
   7. Etc.

C. Action
   1. Demonstration
   2. Dictation
   3. Interview
   4. Conference
   5. Designated performance level
   6. Etc.

D. Behavioral changes
   1. Perceptions
   2. Aspirations
   3. Attitudes
   4. Etc.

CHART 13 (continued)

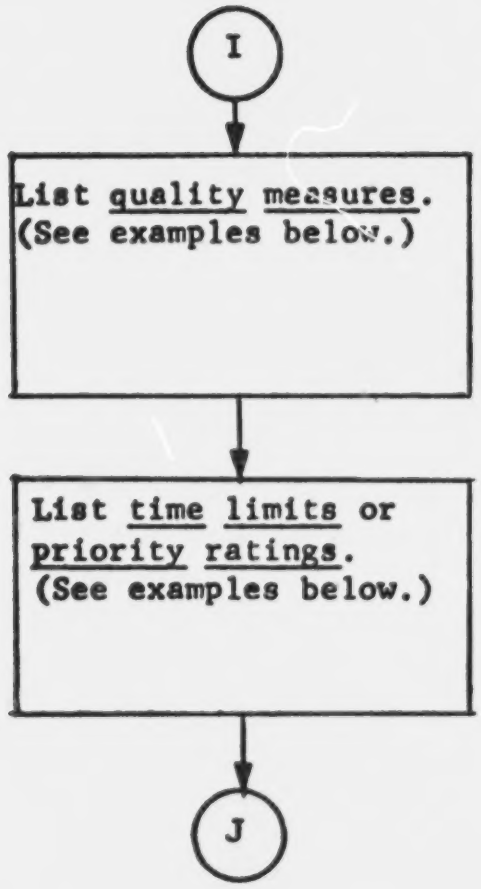


CLARIFICATIONS OR REFINEMENTS OF OUTPUT

A. Quantity
B. Quality
C. Type
D. Length
E. Form

F. Etc.

CHART 13 (continued)



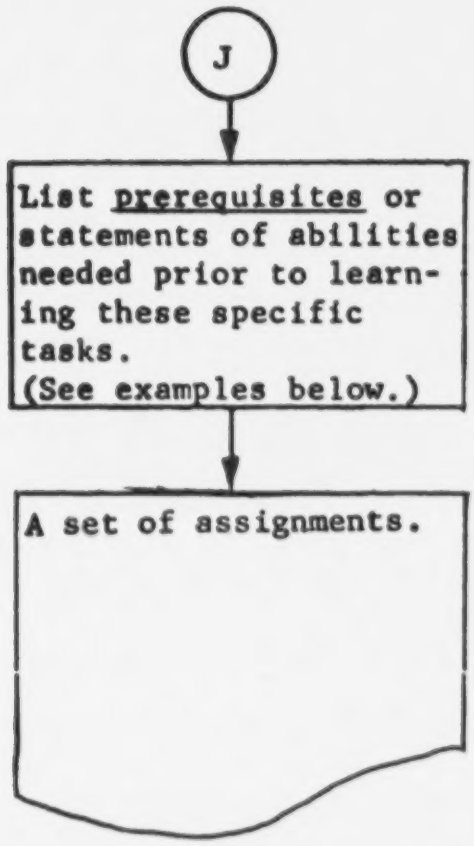
EXAMPLES OF QUALITY MEASURES TO USE

A. Meets stipulated criteria on a printed checklist
B. Conforms to specified error tolerance level
C. Is judged to meet quality measure by competent judges
D. Etc.

EXAMPLES OF TIME LIMITS OR PRIORITY RATINGS TO USE

A. Specified time in minutes, hours, days:_____
B. Priority rating, with time limit unspecified:_____
C. Completion date specified:_____
D. Unspecified or undetermined
E. Etc.

CHART 13 (concluded)


J
List prerequisites or statements of abilities needed prior to learning these specific tasks.
(See examples below.)
A set of assignments.

EXAMPLES OF PREREQUISITE ABILITIES

A. Completion of prerequisite courses or units
   1. Educational institution
   2. In-service courses.
   3. Etc.
B. On-the-job experience or training
   1. Previously performed same task or operation or performed on same type equipment
   2. Previously performed similar task or operation or performed on similar equipment
   3. Etc.
C. Confidence or familiarity by observation

D. Reading, mathematics, English and other skills

E. Specified competencies or achievement of prior specified performance goals

F. No background or experience

G. Etc.

Occupational or job analysis may reveal the need for other conditions which were not illustrated. If such a need exists, new classes of conditions must be added to Chart 13.

Step three: Write Assignments or Performance Goals

The next step is the writing of individual performance goals that will eventually become assignments for the students. The procedure to follow is to take one given, one of each of the refinements of the given if applicable, one source of the givens, and so on. Then, combine these into a meaningful performance statement or assignment. An example follows:

Learning to Operate a New Model of the Electronic Calculator (Not available in the classroom)

Given the assignment of learning to operate a new model of the electronic calculator (2) located in an equipment company sales office (10), the student follows a prescribed course of programmed instruction (19c). He has had no experience with this kind of a calculator before (36) and will be learning to operate this machine to update his individual skills (14), the expected objective (or output) being to use the electronic calculator in a payroll application (25a). He is expected to gain by a given date (32) knowledge and skill comparable to that of an employee who operates the equipment frequently (27).

Code: 2, 10, 14, 19c, 25a, 27, 32, 36.

This assignment (or performance goal) is written by using the starred conditions on the following page. As you will remember, the conditions were developed in Step 2 (according to the instructions in Chart 13). The codes are inserted in the statement to show where they were taken from. Normally they only appear below the statement.

If one of each class of conditions is taken in various combinations, it would be possible to write hundreds, even thousands, of individual assignments. How many should be written at one time?

A SET OF CONDITIONS CONCERNING NEW EQUIPMENT NOT AVAILABLE IN THE CLASSROOM

A. GIVEN
- 1. MT/ST or ATS
- **2. Electronic calculator
- 3. Computer data manipulation devices
  - a. Input
  - b. Output
  - c. Storage
  - d. Retrieval
- 4. Microfilm
- 5. Microfiche
- 6. Aperture cards
- 7. Telecommunication terminals
- 8. Other

B. SOURCE OF GIVEN
- 9. Place of employment
- **10. Equipment company sales office
- 11. Other business concern
- 12. Other

C. PURPOSES
- 13. Increasing company output
- **14. Updating individual's skills
- 15. Advancement
- 16. Job flexibility
- 17. Preparing instructors or supervisors
- 18. Other

D. METHODS
- **19. Self-instruction
  - a. Job instruction sheets
  - b. Equipment manuals
  - *c. Programmed learning
- 20. Coaching by a designated employee
- 21. In-service training
- 22. Other

E. OUTPUTS
- 23. Ability to use electronic calculator for simple arithmetic operations
- 24. Ability to use electronic calculator and its memory units
- **25. Ability to use electronic calculator on applied problems such as
  - *a. Payroll
  - b. Depreciation
  - c. Other
- 26. Other

F. QUALITY MEASURES
- **27. Has knowledge and skill comparable to an employee who operater the equipment frequently, such as daily
- 28. Has knowledge and skill comparable to an employee who uses the equipment occasionally, such as once or twice a week
- 29. Identifies the equipment and its functions and can perform fundamental machine operations
- 30. Can operate the equipment only under close supervision

G. TIME LIMITS OR PRIORITY RATING
- 31. Not specified
- **32. To be completed by _____ (give date)
- 33. To be completed by _____ (give time in days or hours)
- 34. Other

H. PREREQUISITES
- 35. Experience on similar equipment
- **36. No experience on similar equipment
- 37. Limited experience on the new equipment
- 38. Other

The answer depends on the teacher and the needs of the students. A rule-of-thumb answer is to write a sufficient number to prepare a unit or module of instruction.

Step four: Arrange the Set of Assignments in Order of Prerequisite Abilities

Once a sufficient number of assignments have been developed for a unit or module of instruction, they should be sequenced. A variety of considerations may be used in sequencing them. The simplest and most basic assignment would be one which requires no specified background or experience of the student. The objective of the sequence of assignments is to state them so that prerequisites or enabling behaviors are specified, or so that there is a series of assignments for even the student who possesses limited background. Therefore, one of the most obvious ways of sequencing the assignments is to examine the prerequisite or enabling behavior required for the person who is going to attempt them. Another way to sequence the assignments is by the difficulty of the methods the student is to use. Some methods may involve only a few simple steps, others may involve a complex set of steps, problem solving and trouble shooting steps, or extremely complex behavior. Consequently, the method may have a considerable effect on the way in which the assignments are sequenced.

Step five: Prepare the General Directions

Chart 14 presents the overall flowchart of the procedure for developing the general directions for completing a set of assignments. The flowchart begins with a set of sequenced assignments and then shows that seven sub-steps are required to prepare the general

directions for completing them. The first sub-step concerns the procedure by which the student becomes aware of the details of and need for the assignment. How does he examine the assignment to sort out all the conditions he must consider? Eventually he should be able to determine which conditions are missing in case he is given an incomplete or ambiguous assignment,which may more often be the rule on the job than not.

Chart 15 (similar in format to Chart 13) gives the details for writing the general directions for completing a particular set of assignments. It is comprised of seven pages. As is commonly known, the more specific the directions are, the more likely the student will be able to complete the assignment. Ultimately, of course, less specific directions will be provided the student since he should begin to develop his own. For example, the procedure "list continuation steps or procedures" includes opportunity for devising alternatives for continuing. Also, the procedure "list revisions, evaluation, or modifications," also provides an opportunity for the student to design his own procedure. Another way of stating this idea is that in the sequence of assignments, the most elementary ones would <u>not</u> require the student to deal with an ambiguous set of directions, but as he progresses into the more difficult assignments, his set of directions would become less precise. The objective, as previously mentioned, would be to have the student design and develop his own directions (methods and procedures).

CHART 14

Procedure for Developing the General"Directions for Completion" of a Set of Assignments

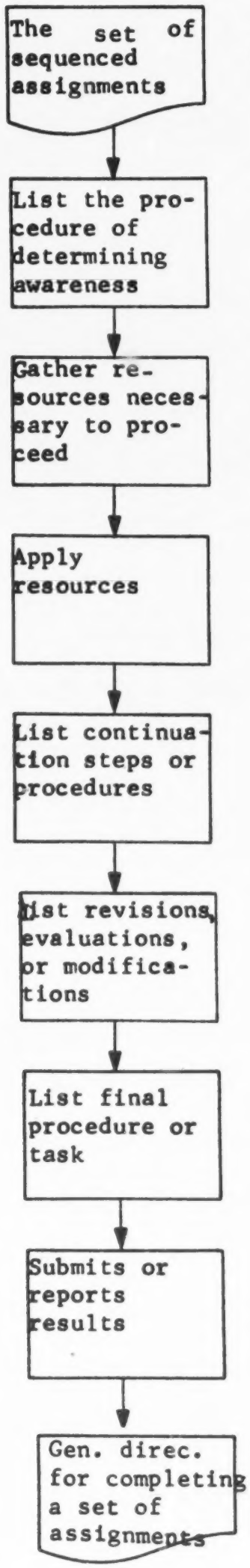
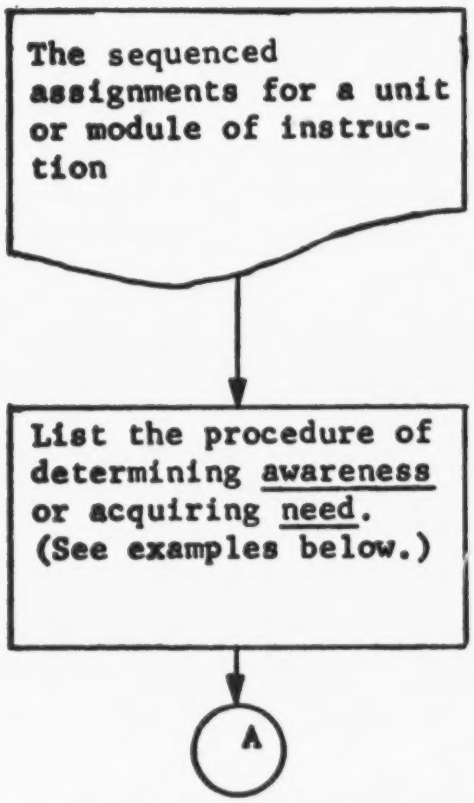

The set of sequenced assignments
List the procedure of determining awareness
Gather resources necessary to proceed
Apply resources
List continuation steps or procedures
List revisions, evaluations, or modifications
List final procedure or task
Submits or reports results
Gen. direc. for completing a set of assignments

CHART 15

Detailed Procedure for Developing the General "Directions for Completion" of Assignments

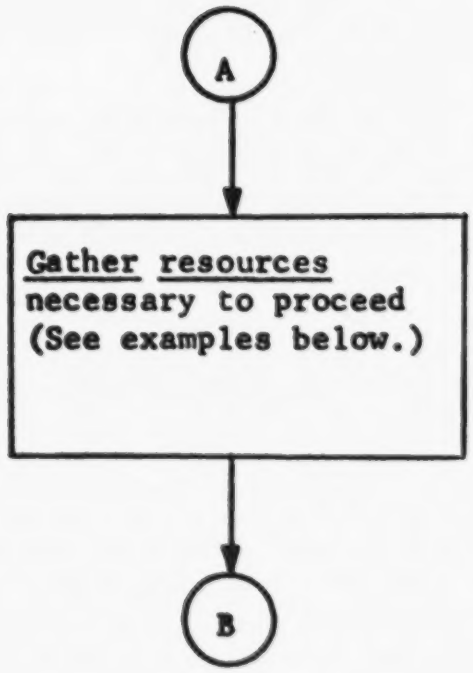

The sequenced assignments for a unit or module of instruction
List the procedure of determining awareness or acquiring need. (See examples below.)
A

EXAMPLES OF DETERMINING AWARENESS OR ACQUIRING NEED

A. Contact with people
   1. Establishes rapport with person
   2. Greets customer or patient
   3. Receives a request
   4. Receives instructions, directive, orders, etc.
   5. Receives telephone call
   6. Etc.

B. Observation
   1. Becomes aware of an event, such as a buzzer, flashing light, delivery, etc.
   2. Becomes aware of error
   3. Determines variations or alternatives
   4. Determines effect if proper action is not taken
   5. Discovers a difference or variation
   6. Notes an opportunity for improvement
   7. Becomes aware of the value of something
   8. Analyzes need to adjust
   9. Etc.

CHART 15 (continued)



EXAMPLES OF RESOURCES:

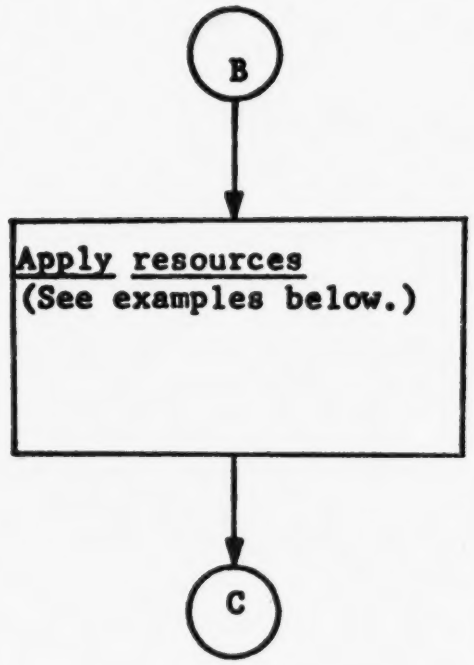
A. Instruction
   1. Oral direction
   2. Coaching or supervision by fellow employee or supervisor
   3. Etc.

B. Recorded information
   1. Books
   2. Stipulated reference materials
   3. Document containing error
   4. Table of information
   5. Mail
   6. Etc.

C. Material or equipment
   1. Stationery
   2. Office machines
   3. Data processing equipment
   4. Audio-visual equipment
   5. Etc.

D. Oral information
   1. Elicits required information
   2. Interviews, questions, etc.
   3. Etc.

CHART 15 (continued)



EXAMPLES OF RESOURCE APPLICATION

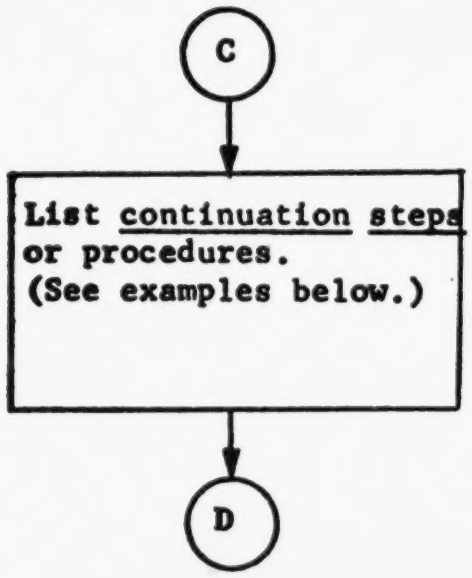
A. Analyzes or previews
   1. Determines whether information is sufficient
   2. Discusses with person
   3. Appraises equipment or machine
   4. Previews present or stipulated procedure
   5. Confirms materials or data are suitable
   6. Confirms responsibilities or procedures
   7. Demonstrates ability
   8. Etc.

B. Designs a plan for
   1. Registering information
   2. Preliminary charts or graphs or scales
   3. Procedure
   4. Use of equipment
   5. Amount of space available
   6. Number of items to be involved
   7. Presorting parts or materials
   8. Technical details
   9. Familiarization with material, procedure or equipment
   10. Records needed
   11. Arrangements
   12. Timing, placement, and strategy of something
   13. Etc.

C. Searches, locates or selects
   1. Items
   2. Methods
   3. Information to code
   4. Missing data
   5. Coding schemes
   6. Etc.

D. Readies equipment, materials, or person
   1. Converts work station or area for task
   2. Prepares equipment for use
   3. Overcomes resistance or objectives
   4. Helps person get ready for task
   5. Demonstrates ability in present system
   6. Prepares or assembles materials needed
   7. Inspects or adjusts
   8. Shows, informs, and instructs person
   9. Etc.

CHART 15 (continued)



EXAMPLES OF CONTINUATION STEPS

A. Records information or data
   1. Converts a sample to code
   2. Registers the information
   3. Designs output
   4. Totals account balances
   5. Copies, transcribes, or composes
   6. Grades, measures, counts, or sorts
   7. Completes forms
   8. Etc.

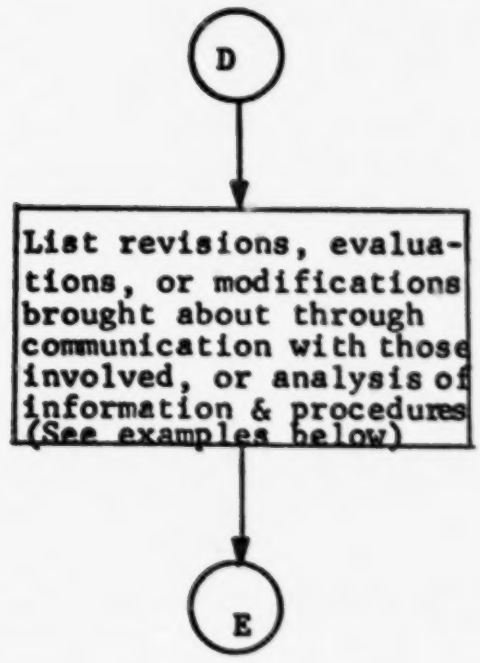
B. Operates machines, equipment, or tools
   1. Performs on the equipment
   2. Regulates the operation of the machinery or equipment
   3. Etc.

C. Compiles, arranges, or manipulates
   1. Opens incoming mail, removes and sorts contents
   2. Systematizes
   3. Edits
   4. Traces data or error through system
   5. Gathers and prepares data or materials
   6. Etc.

D. Elicits, explains, or determines
   1. Makes judgements of what was needed or what to use
   2. Seeks related information
   3. Determines cost
   4. Explains product or service
   5. Answers objections or questions
   6. Circumvents resistance, perserveres, verbalizes to clarify
   7. Assigns duties
   8. Etc.

E. Reacts or responds
   1. Adapts to new system
   2. Assesses capabilities and features
   3. Compares systems
   4. Predicts utility
   5. Terminates discussion
   6. Etc.

CHART 15 (continued)


D
List revisions, evaluations, or modifications brought about through communication with those involved, or analysis of information & procedures (See examples below)
E

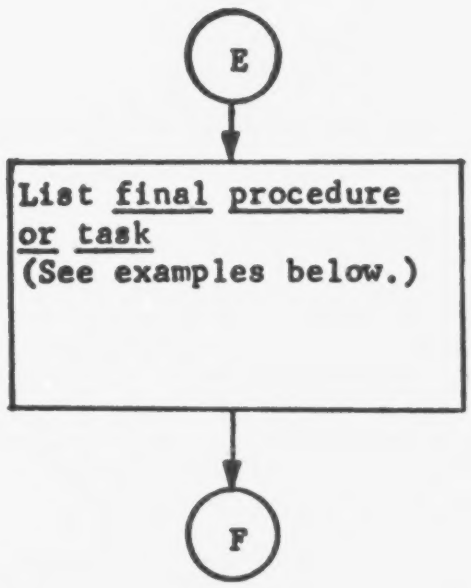
EXAMPLES OF REVISIONS, EVALUATIONS, OR MODIFICATIONS

A. Corrects or verifies
   1. Proofreads and corrects detected errors
   2. Submits preliminary information or data for review
   3. Etc.

B. Communicates with person involved
   1. Reads information back to customer for verification
   2. Permits person to review recorded information
   3. Etc.

C. Analyzes and evaluates
   1. Recorded information
   2. Discussion
   3. Effect of error
   4. Process
   5. Etc.

CHART 15 (continued)



EXAMPLES OF FINAL PROCEDURE

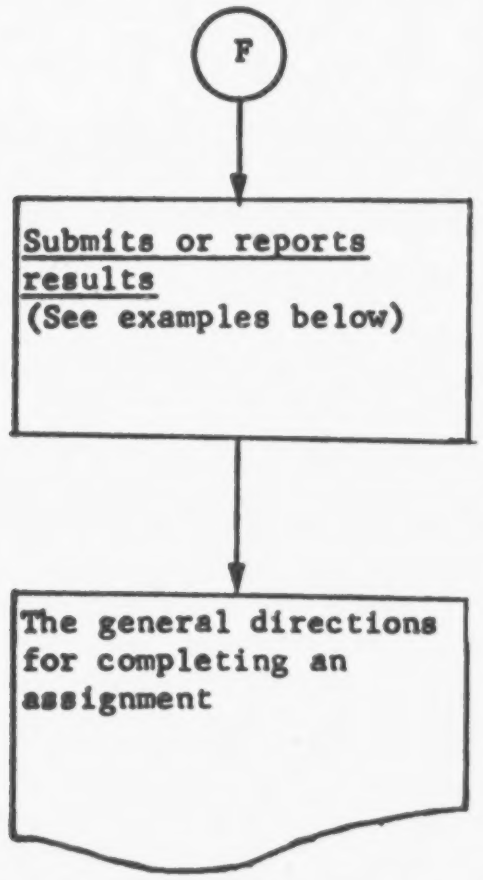
A. Acknowledges completion or demonstrates competency
   1. States have learned to operate or perform
   2. Assembles and arranges data
   3. Demonstrates performance at task or in system
   4. Finishes sorting
   5. Verifies total with proof
   6. Cleans equipment or area after use
   7. Removes finished product
   8. Recognizes completion of task
   9. Completes process or procedure
   10. Performs on equipment
   11. Etc.

B. Forwards, delivers, or stores results for further action
   1. Submits final plan
   2. Stores output
   3. Distributes output
   4. Marks up and delivers to media for action
   5. Etc.

C. Terminates contact with person or thing
   1. Is told the work is satisfactory
   2. Secures signature
   3. Secures approval
   4. Makes appointment
   5. Makes plans for next contact
   6. Etc.

D. Makes final record
   1. Codes remainder of information
   2. Devises final plan
   3. Records accounting information
   4. Copies addresses
   5. Calculates amount needed
   6. Etc.

CHART 15 (concluded)



EXAMPLES OF SUBMITTING RESULTS OR REPORTS

A. Reports results or findings
   1. To supervisor or teacher
   2. By mail to designated addresses
   3. To person for approval
   4. Etc.

Step six: Write General Criteria

Chart 16 is the overall flowchart for developing criteria. As can be seen from Chart 16, the teacher uses the general directions developed in Step five to prepare the criteria. Criteria are actually smaller or more detailed directions. They serve as checkpoints to determine whether something is finished or some action has been completed. They guide the student in deciding whether he should advance to the next direction.

Chart 17 is similar to Charts 13 and 15 in format and design. It contains eight pages and shows the detailed sub-steps for writing criteria to decide whether the directions are being appropriately and adequately followed. It should be noted that criteria are written not only for time allowed for completion, but also for quality measures. Quality measures include checkpoints or even checksheets to verify the details of what has just been completed before proceeding to the next direction. Such checksheets may be used by the student or the teacher. Their purpose is to introduce objectivity into the decision of how good something is.

Criteria may involve recall or discrimination. They may include attitudes (as measured by attitude scales). They may include actions or performance. They help the teacher and student determine whether "what is" or "what has been done" are all right. Observe that criteria are stated as if they were completed. A number of criteria are usually written for each sub-step in the directions. The total set of criteria are called "Guidelines for Assessing Fulfillment of an Assignment."

CHART 16 Procedure for Developing Typical "Criteria" (Measurable Steps) for the Performance Goal Instrument

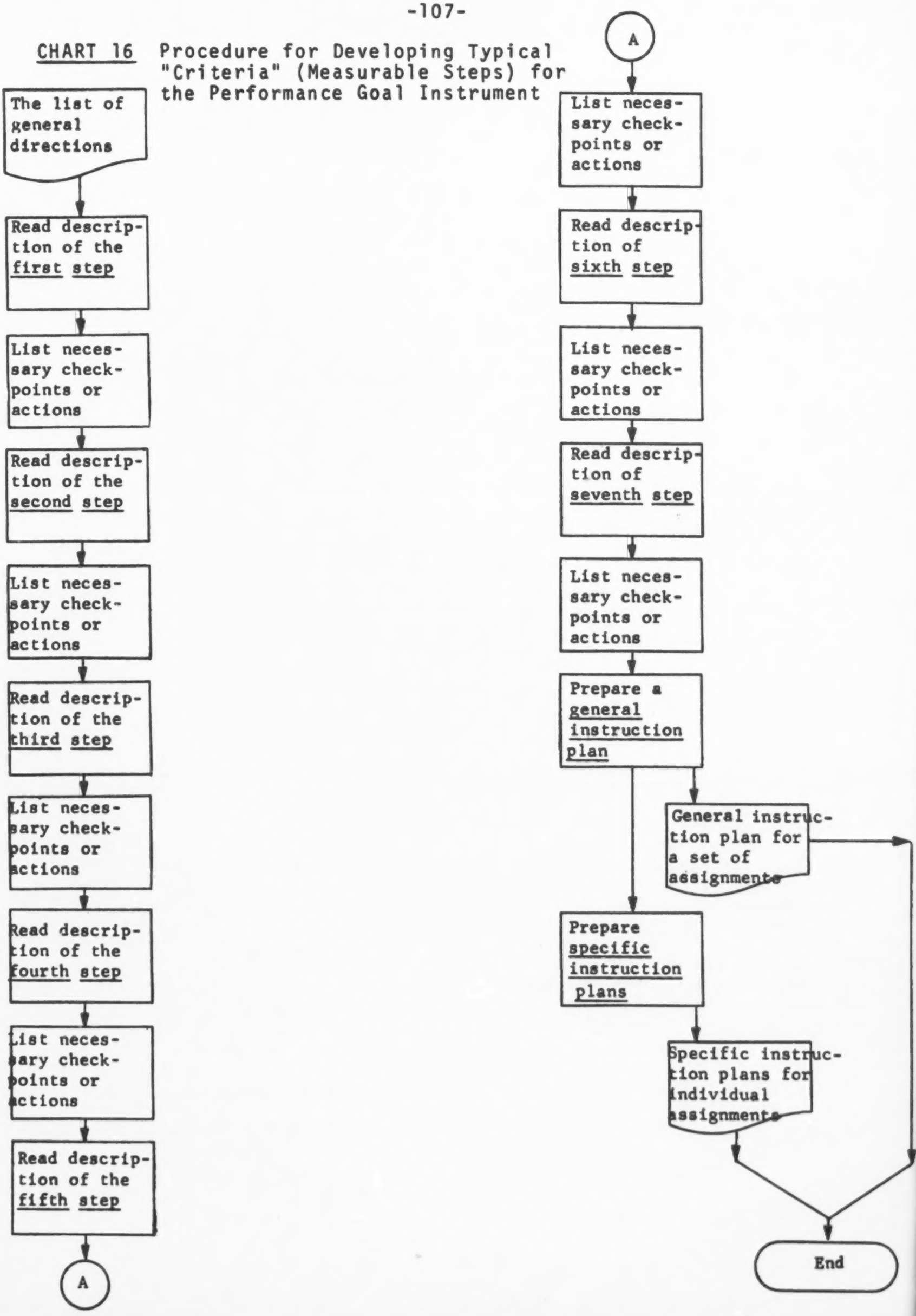
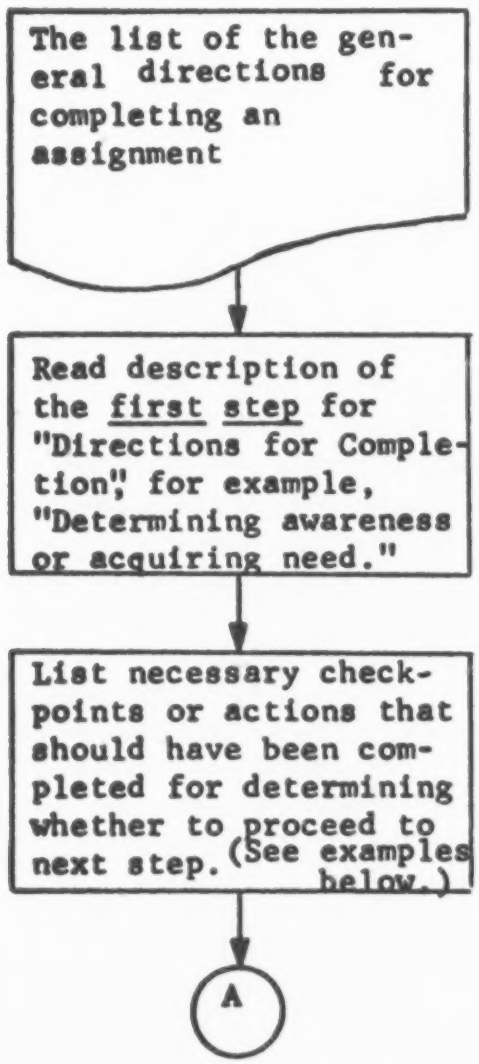

The list of general directions
Read description of the first step
List necessary checkpoints or actions
Read description of the second step
List necessary checkpoints or actions
Read description of the third step
List necessary checkpoints or actions
Read description of the fourth step
List necessary checkpoints or actions
Read description of the fifth step
A
A
List necessary checkpoints or actions
Read description of sixth step
List necessary checkpoints or actions
Read description of seventh step
List necessary checkpoints or actions
Prepare a general instruction plan
General instruction plan for a set of assignments
Prepare specific instruction plans
Specific instruction plans for individual assignments
End

CHART 17

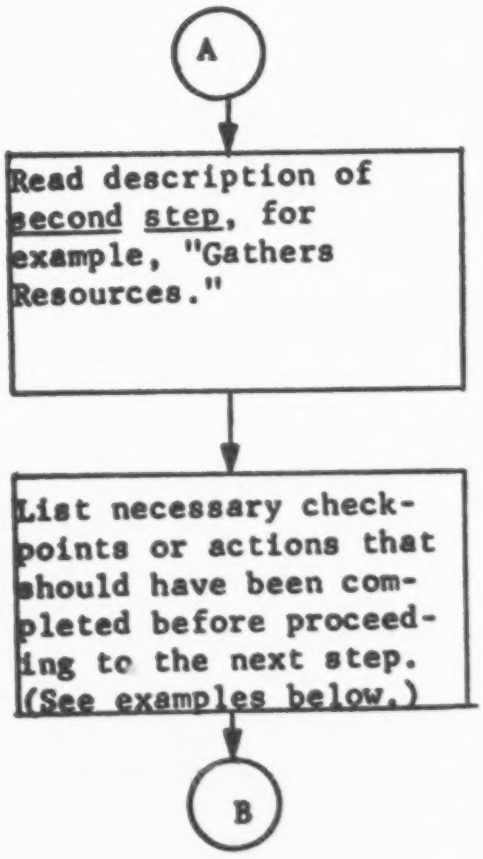
Detailed Procedure for Developing Typical "Criteria" (Measurable Steps) for the Performance Goal Instrument


The list of the general directions for completing an assignment
Read description of the first step for "Directions for Completion," for example, "Determining awareness or acquiring need."
List necessary checkpoints or actions that should have been completed for determining whether to proceed to next step. (See examples below.)
A

EXAMPLES OF CRITERIA FOR DETERMINING AWARENESS OR ACQUIRING NEED

A. Information and instructions were noted or recorded.
B. Conditions were individually noted or restated.
C. Discussion, conferences, or interviews on the problem were held.
D. Errors or deficiencies were recognized or discovered.
E. Equipment, machine, process, or procedure was observed.
F. Appropriate requisitions were identified and selected.
G. Desirable attitudes were exhibited
H. Etc.

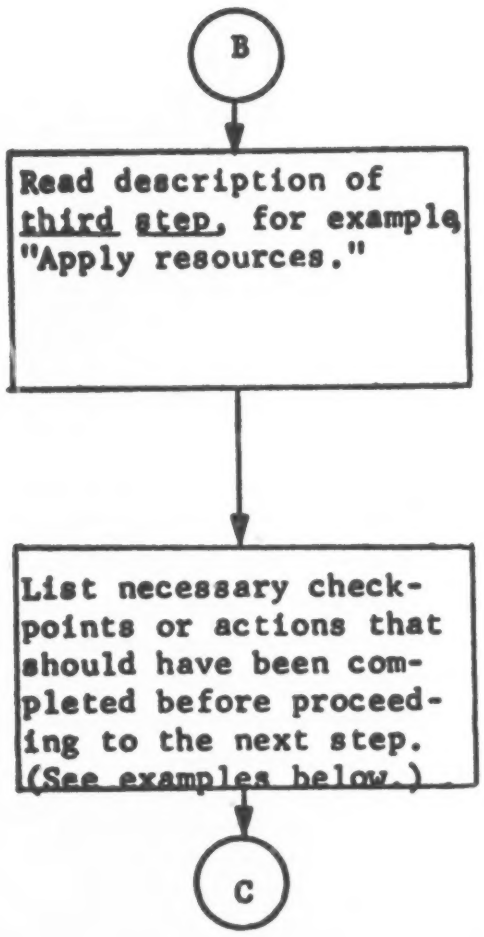
CHART 17 (continued)


A
Read description of second step, for example, "Gathers Resources."
List necessary check-points or actions that should have been com-pleted before proceed-ing to the next step. (See examples below.)
B

EXAMPLES OF CRITERIA FOR "GATHER RESOURCES"

A. Source personnel were observed, interviewed, or questioned.
B. Records, information, and instructions were obtained from file.
C. Working materials,supplies, equipment were located or obtained.
D. Reference or source materials were gathered and reviewed.
E. Information was recorded.
F. Work station was readied.
G. Etc.

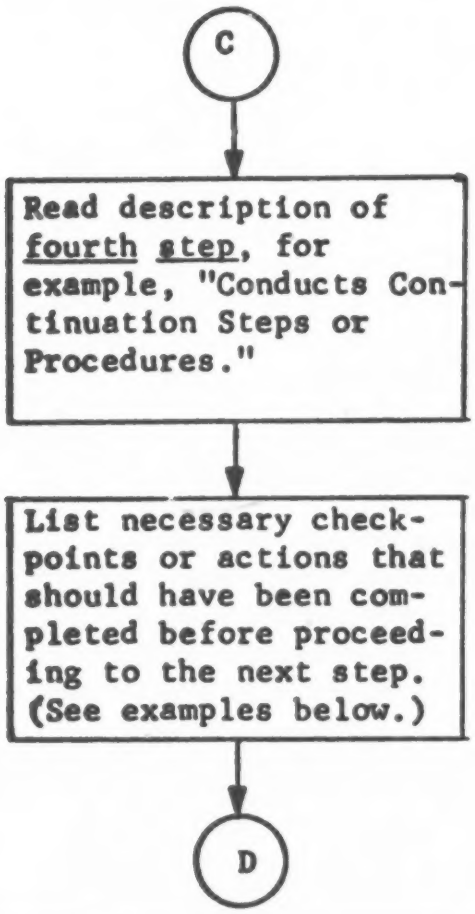
CHART 17 (continued)


B
Read description of third step, for example "Apply resources."
List necessary checkpoints or actions that should have been completed before proceeding to the next step. (See examples below.)
C

EXAMPLES OF CRITERIA FOR "APPLY RESOURCES"

A. Initial steps according to standard procedure were taken.
B. Work place was made ready.
C. Persons involved were greeted, recognized, or assisted.
D. Assistance and directions were obtained from source personnel.
E. Standard plans or procedures were revised or modified.
F. Adjustments were made.
G. Appropriate greeting was made.
H. Plans or procedures were created, identified, or reviewed.
I. Benefits of successful performance were pointed out.
J. Procedure or operation was observed, discussed, or evaluated.
K. Problem was interpreted.
L. Reference or source materials were gathered and reviewed.
M. Information was recorded.
N. Working materials, supplies, or equipment were obtained.
O. Procedures or operations were performed or used.
P. Equipment or work station was located and readied for operation.
Q. Etc.

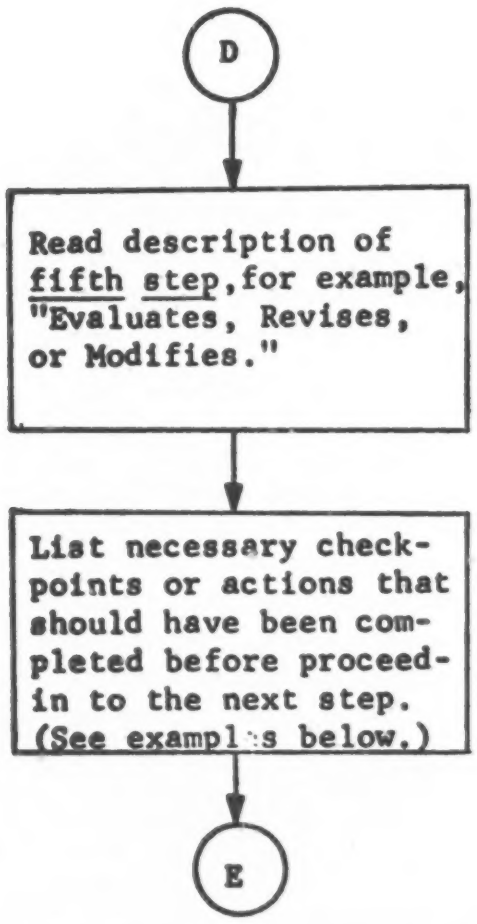
CHART 17 (continued)


C
Read description of fourth step, for example, "Conducts Continuation Steps or Procedures."
List necessary checkpoints or actions that should have been completed before proceeding to the next step. (See examples below.)
D

EXAMPLES OF CRITERIA FOR "CONDUCTS CONTINUATION STEPS OR PROCEDURES"

A. Steps were taken according to standard procedure.
B. Trial procedures were taken.
C. Ideas and suggestions were elicited or accepted and then applied.
D. Work of person was overseen.
E. Information was recorded.
F. Assistance or direction was obtained from source personnel as necessary.
G. Ideas and suggestions were accepted.
H. Procedures or operations were performed or learned.
I. Materials gathered were reviewed.
J. Etc.

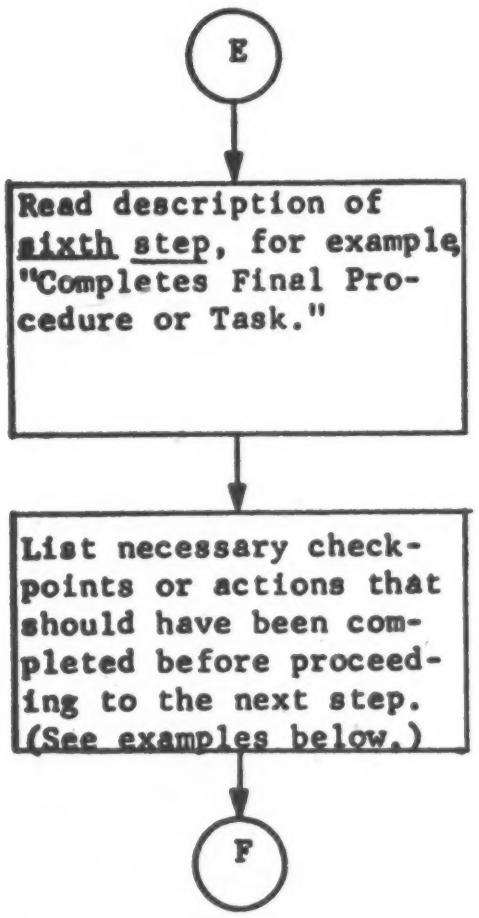
CHART 17 (continued)


D
Read description of fifth step, for example, "Evaluates, Revises, or Modifies."
List necessary checkpoints or actions that should have been completed before proceeding to the next step. (See examples below.)
E

EXAMPLES OF CRITERIA FOR "EVALUATES, REVISES, OR MODIFIES"

A. Progress was reviewed against a checklist.
B. Assistance and direction were obtained from source personnel.
C. Directions and instructions were reviewed and restated as needed.
D. Plans and procedures were modified or revised.
E. Information was compared with original sources.
F. Information was recorded or evaluated.
G. Material was examined for errors or deficiencies.
H. Etc.

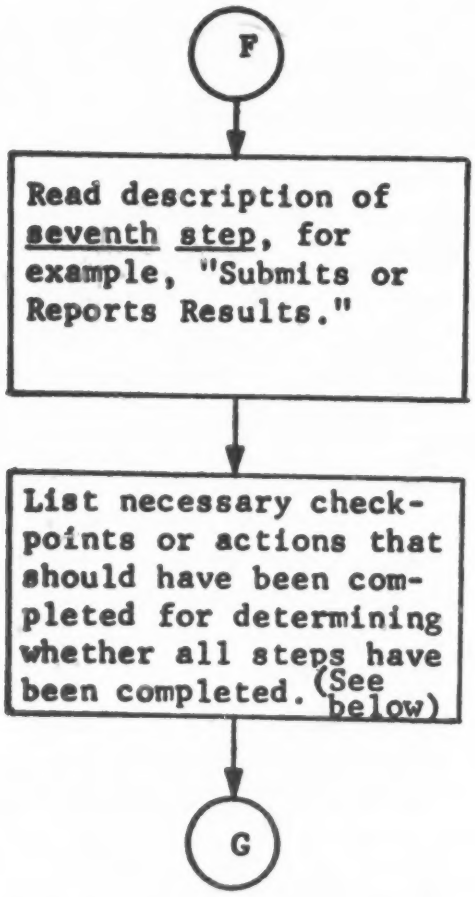
CHART 17 (continued)


E
Read description of sixth step, for example, "Completes Final Procedure or Task."
List necessary checkpoints or actions that should have been completed before proceeding to the next step. (See examples below.)
F

EXAMPLES OF CRITERIA FOR "COMPLETES FINAL PROCEDURE OR TASK"

A. Performance or procedure was verified, reviewed, or corrected.
B. Additional source or reference information necessary for completion of assignment was obtained.
C. Equipment or work space was cleaned up.
D. Equipment was turned off.
E. Additional assistance or direction was obtained from source personnel.
F. Performance or procedure steps were repeated, completed, or demonstrated.
G. Performance or procedure was approved or accepted.
H. Etc.

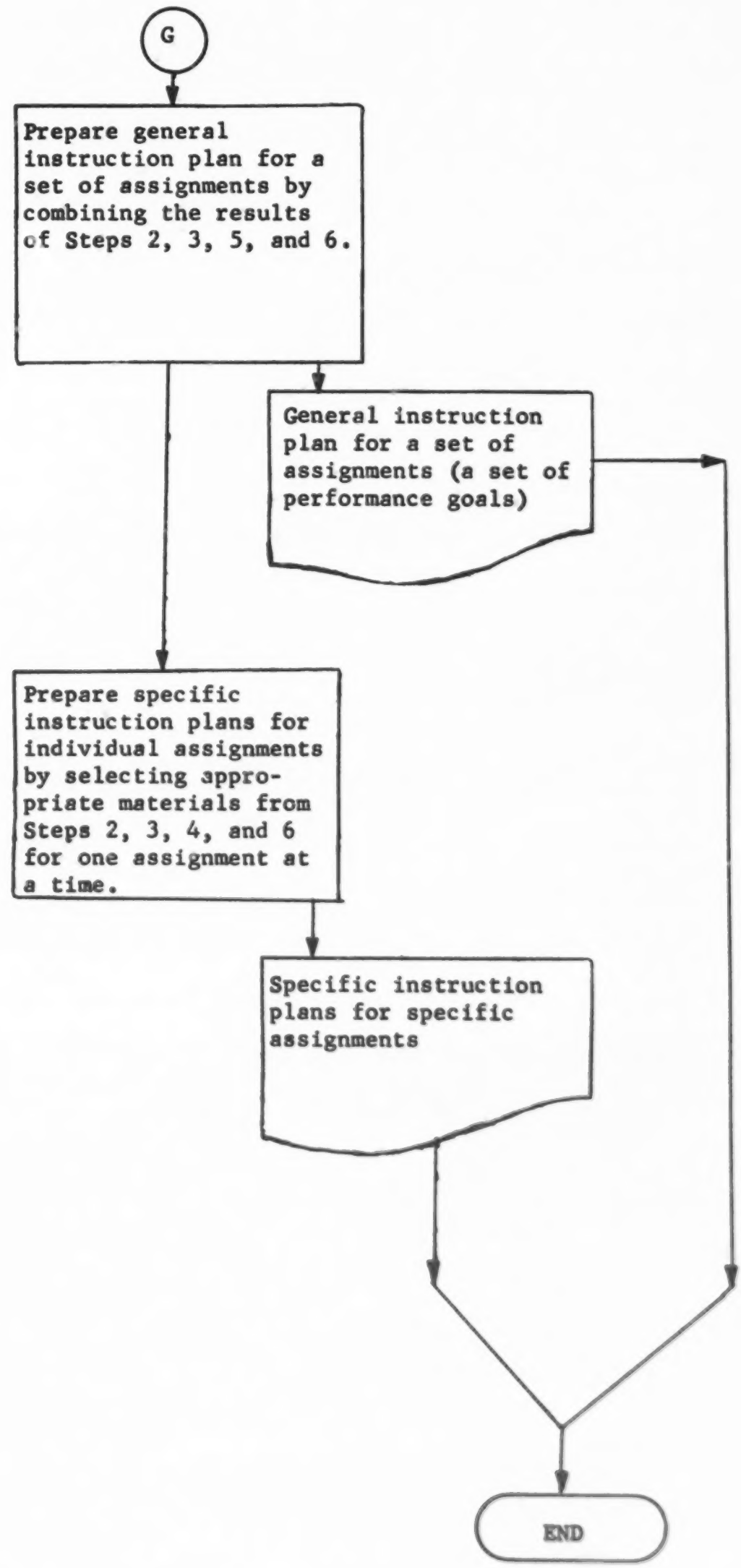
CHART 17 (continued)


F
Read description of seventh step, for example, "Submits or Reports Results."
List necessary check-points or actions that should have been completed for determining whether all steps have been completed. (See below)
G

EXAMPLES OF CRITERIA FOR "SUBMITS OR REPORTS RESULTS"

A. Finished work was examined for completeness or neatness.
B. Results were reported or submitted.
C. Results were audited, verified, or reviewed against a checklist.
D. Results were approved, accepted, or rejected.
E. Recommendations were made on the basis of the outcomes.
F. Improved procedures were discussed or listed.
G. Problems encountered during assignment were discussed with source personnel and peer group.
H. Importance of ability, procedure, or item measured was discussed or recognized.
I. Etc.

CHART 17 (concluded)


G
Prepare general instruction plan for a set of assignments by combining the results of Steps 2, 3, 5, and 6.
General instruction plan for a set of assignments (a set of performance goals)
Prepare specific instruction plans for individual assignments by selecting appropriate materials from Steps 2, 3, 4, and 6 for one assignment at a time.
Specific instruction plans for specific assignments
END

Step seven: Prepare General Instruction Plan for a Set of Assignments

When Step six is completed, then it is possible to prepare a General Instruction Plan for the set of assignments. Essentially a general instruction plan consists of the four parts discussed in Steps 2, 3, 5, and 6: conditions of the job or task, a set of performance goals (assignments), directions, and criteria. Examples of General Instruction Plans appear in Part IV for sets of related assignments (performance goals). Each general plan relates to one high-priority ability.

Step eight: Prepare Specific Instruction Plans for Individual Assignments

The general instruction plan is the source for specific instruction plans. Refer to B2 of the general instruction plans in Part IV (page 127). Use assignment 2, "Preliminary Adjustment to a New Electronic Calculator," as an example. A specific instruction plan for this assignment consists of three parts: the detailed assignment (performance goal) taken from the conditions shown in B2, specific directions and specific criteria in B2. A specific instruction plan is shown on the next page.

SPECIFIC INSTRUCTION PLAN

Preliminary Adjustment to a New Electronic Calculator

Given the assignment of adjusting to the work sequences and procedures required by an electronic program calculator for the purpose of updating knowledges and skills, arrangements are made to use the calculator of another business concern at that concern's place of business. The present equipment used provides many similarities in procedures or work sequences; and the student or employee has been required to shift to new equipment, work sequences, and procedures many times in the past. Arrangements for interviews and coaching from employees of a company or business currently using the equipment are made. A written report is filed upon completion of the assignment. The student will have _____hours to complete the assignment.

Code: 3a, 8, 11, 16, 21, 27, 31, 34, 43

TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
1. Acquires an awareness of the need for adjusting to a new electronic calculator.	a. Advantages of new calculator were discussed with an employee or operator. b. Manufacturer's sales brochure was read. c. Visit to an office having the new calculator was made. (Arrangements were made to carry out Task 3b at the same time.)
2. Analyzes his need to adjust from a rotary or printing calculator to a new electronic calculator.	a. Observation of operation of new equipment was made. b. Differences in locations of indexing and function keys and bars were noted. c. Differences in the number of memory registers were noted. d. Advantages of new calculator over old calculator were discussed with the operator. e. Present knowledge and skills were recognized as insufficient. f. Desire to operate new equipment was expressed.

TASKS TO BE PERFORMED (Cont.)	CRITERIA TO MEASURE PERFORMANCE (Cont.)
3. Arranges to be coached for a short time by an office machine operator in a nearby business.	a. Location of new calculator was determined by calling sales representative. b. Permission for an hour visit was obtained from manager by means of a letter and a follow-up telephone call. c. Arrangements were made with operator for coaching on multiplication and division.
4. Familiarizes himself with the equipment.	a. Operator's manual was observed and reviewed. b. Operator's demonstration was observed. c. Questions were asked of operator. d. Steps to follow on a multiplication operation were discussed.
5. Performs on the equipment.	a. The multiplication operation was attempted and practiced. b. Three-factor multiplication using the memory feature was discussed, attempted, and practiced. c. Other operations were tried and practiced.
6. Acknowledges that he has learned to operate the equipment.	a. Procedures were demonstrated by student. b. Student's familiarity with operation of machine to multiply and divide using the memory feature was acknowledged by the operator (coach).
7. Reports on his feelings towards the assignment.	a. A report was written or orally given about the experience of adjusting to the operation of the new electronic calculator, including such items as features and advantages of new equipment, differences between old and new calculators, comments of the coach, etc. b. Assignment was completed within a week depending on time required to gain access to the equipment.

CONCLUSIONS

The business teacher should take the following steps in developing the instructional program to incorporate the expected requirements of the emergent office:

1. Write performance goals (or assignments) for the 30 high-priority abilities reported in Part II. In Part IV, 18 performance goals have already been developed. Primary sources such as research reports or job analyses should be used when available. Secondary sources such as books, articles in professional periodicals, new textbooks, and manuals may also be used. Use the procedures described in this report to prepare the assignments.

2. Organize the resulting assignments into modules, units, or courses, and incorporate them in a new or existing curriculum which includes the requirements for the current office.

3. Arrange the individual assignments in order of prerequisites (or enabling behaviors) required of the student.

4. Assess the prerequisites or enabling behaviors of a student who is preparing for entry into the initial job under consideration.

5. Select and give an assignment to the student that meets his prerequisite abilities.

6. If no such assignment is available, develop an intermediate assignment that prepares the student for one of the set. An intermediate assignment will usually assume limited, or no, background. When necessary, a sequence of intermediate assignments may clearly point the student toward his objective of a job-entry type of an assignment.

7. Continue to make assignments to the student according to his needs and prerequisite abilities.

8. Work individually as necessary with the student in achieving a particular assignment.

9. When the student completes an assignment, review with him the criteria for assessing fulfillment of the assignment. Each assignment should be perfected or mastered.

10. If a student cannot complete or perfect an assignment, determine whether he actually possesses the necessary enabling behaviors. If he does, have him repeat steps 5-9. If he does not, give him a more basic assignment or reassess his needs, interests, and abilities for another selection of assignments leading to another kind of entry job.

11. Make a record of the assignments achieved.

12. Provide for periodic review and refreshment of knowledges, skills, and attitudes.

13. Repeat steps 5-12 for additional assignments.

14. Grade students for administrative purposes on the number of assignments completed or perfected; or give credit for completion when the student finishes the prescribed assignments in a module, a unit, or a course.

PART IV

GENERAL INSTRUCTION PLANS FOR SETS OF PERFORMANCE GOALS (ASSIGNMENTS) FOR THE EMERGENT OFFICE

18 General Instruction Plans for Sets of Performance Goals

1. A-2 Ability to describe and chart the structural organization of your firm or unit and to visualize one's role in the enterprise or unit.

*2. B-2 Ability to adjust quickly to new equipment, procedures, and work sequences brought about by rapid technological changes for the purpose of updating skills, increasing individual productive capacity, and raising company output.

*3. B-4 Ability to perform adequately in one system, switch to another system and perform adequately, and then switch back and perform adequately again. (Total job flexibility)

*4. C-3 Ability to recognize how inaccurate data entering a system may affect outcomes on succeeding jobs.

*5. D-1 Ability to gain rapport with all racial groups.

6. D-3 Ability to elicit information from others who need not cooperate and hence must often be persuaded to cooperate.

*7. E-2 Ability to communicate via data communication devices and to know the limitations, methods of utilization, and choose from available equipment for particular operations.

***8. F-3 Ability to formulate plans for collection, processing, storage, and retrieval of information to meet the needs of the organization.

***9. F-6 Ability to ascertain what information should be programmed into an integrated information system.

***10. G-1 Ability to construct basic flowcharts for projects, systems, or subsystems for purposes of planning, analyzing, implementing, controlling, and budgeting.

*11. G-2 Ability to input data in an on-line, real-time system to obtain information for report preparation, office work production, and exception reporting.

12. G-8 Ability to landscape an office or assist in landscaping an office to coordinate color, equipment, furniture, and lighting with information flow, worker satisfaction, and job efficiency.

**13. H-1 Ability to operate various pieces of new equipment through self-instruction or in-service training. (MTST, Electronic Calculator, ATS, etc.)

**14. H-3 Ability to operate microfilm and microfiche equipment.

***15. H-4 Ability to ascertain and analyze the capabilities and functions of copying machines, data reproduction equipment, and data display terminals.

***16. I-2 Ability to locate information systems services and to select those that are appropriate.

**17. I-3 Ability to convert data to appropriate coding schemes.

**18. I-4 Ability to assemble and arrange input data for processing.

* Identified as basic to all office personnel including management. (Table 10) Instructional plans were not prepared for G3 and G4 as previously explained on page 77.

** Identified as important to supervisory, clerical, and professional-technical personnel. (Table 11) Instructional plans were not prepared for G6 and H2 as previously explained on page 77.

*** Identified as important to management, supervisory, and professional-technical personnel. (Table 12) Instructional plans were not prepared for C1, C2, E1, E3, F1, F2, F4, F5, F7, and I1 as previously explained on page 77.

A2 ABILITY TO DESCRIBE AND CHART THE STRUCTURAL ORGANIZATION OF YOUR FIRM OR UNIT AND TO VISUALIZE ONE'S ROLE IN THE ENTERPRISE OR UNIT.

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Identifying overlapping authority

Given the assignment of charting the structural organization of a department for the purpose of identifying overlapping authority, the individual prepares a line organization chart. The data are found in existing charts, which provide all the necessary information in an organized manner. The individual studies the charts to see who assigns work to whom. He obtains necessary material and supplies from the instructor. The individual has not been assigned such a task before, and no specified time limit is set for the completion of the assignment.

Code: 2, 5, 13, 16, 21, 30, 34, 40, 44

2. Identifying promotional possibilities

Given the assignment of charting the structural organization of a department in order to identify promotional possibilities, the individual refers to existing charts which provide most of the necessary details. He obtains the necessary material and supplies from other students or employees. He also records the main functions of the department and draws a line and staff organization chart. The task is new to him. The individual is asked to complete the chart in a week.

Code: 2, 5, 12, 18, 28, 32, 36, 40

A2
CONDITIONS

A. GIVEN THE ASSIGNMENT OF DESCRIBING AND CHARTING THE STRUCTURAL ORGANIZATION OF

1. A business firm
2. A department
3. A unit with a department
4. Other_____

B. THE DATA TO BE DRAWN FROM

5. Existing charts
6. Reports, i.e., job descriptions
7. Notes or minutes, i.e., meetings
8. Observation records
9. Interview reports
10. Questionnaire findings
11. Other_____

C. USING THE FOLLOWING METHODS

12. Determine and record main functions
13. Determine and record who assigns work to whom
14. Determine and record who reports to whom

D. OBTAINING THE NECESSARY MATERIALS AND SUPPLIES FROM

15. Supply office
16. Instructor
17. Business office
18. Other students or employees
19. Other_____

E. TO BE REPORTED IN THE FORM OF

20. Functional organization chart
21. Line organization chart
22. Line and staff organization chart
23. Committee organization chart
24. Written report
25. Other_____

F. FOR THE PURPOSE OF IDENTIFYING

26. Line relationships
27. Staff relationships
28. Line and staff relationships
29. Functional relationships
30. Overlapping authority
31. Overlapping responsibility
32. Promotional possibilities
33. Other_____

G. THE DEGREE OF DATA COMPLETENESS BEING

34. All details available, organized
35. All details available, but not organized
36. Most details available
37. Some details available
38. No details available
39. Other_____

H. THE LEVEL OF TASK FAMILIARITY BEING

40. New task, never done before
41. Task done only a few times before
42. Task done many times previously
43. Similar task

I. TIME ALLOTMENT FOR THE TASK BEING

44. Unspecified
45. Predetermined

A2 TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
1. Acquires (I-3.03)* an awareness of need for organization structural chart	a. A manager of a business firm, a department, or a unit was interviewed for the purpose of studying the organization b. Purpose of structural charts were listed
2. Previews (I-3.05) structure or organization	a. Company officers were consulted to determine lines of authority and staff positions b. Work flow descriptions were obtained from management c. Personnel manager was consulted to obtain job titles and descriptions d. Existing information on organizational structure was reviewed
3. Gathers (I-3.02) reference materials	a. Charts and manuals were obtained and studied
4. Designs (I-5.0) preliminary chart	a. Necessary chart paper and supplies were gathered b. Existing organizational charts were analyzed c. Structural form which appeared adaptable for our purpose was selected d. Selected structural form was modified as needed and charted for our situation
5. Submits (I-12.14) preliminary chart to members of organization for verification and suggestions	a. Company officers and management were consulted for verification. b. Suggestions and criticisms were noted
6. Modified (I-8.0) and revises (I-8.09) chart as necessary	a. Modifications to preliminary chart were made as a result of suggestions and criticisms. b. Revised preliminary chart was verified by management and officers. If chart was not accepted return to 6a
7. Submits (I-12.14) revised chart for approval	a. Structural chart was accepted
8. Reports on feelings of assignment	a. Problems of constructing chart were discussed with instructor and peer group

* Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers.

B2 ABILITY TO ADJUST QUICKLY TO NEW EQUIPMENT, PROCEDURES, AND WORK SEQUENCES BROUGHT ABOUT BY RAPID TECHNOLOGICAL CHANGES FOR THE PURPOSE OF UPDATING SKILLS, INCREASING INDIVIDUAL PRODUCTIVE CAPACITY, AND RAISING COMPANY OUTPUT.

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Word processing system

Given the assignment of adjusting to the work sequences and procedures of a word processing system, the individual borrows equipment from a service company and arranges for interviews with, and on-the-job training by, a machine company representative. The student or employee will demonstrate the equipment at his school or place of employment and indicate feelings regarding increased productivity resulting from the equipment operation. The equipment currently used provides few similarities in work sequences and procedures. The student or employee has been required to shift to new equipment, work sequences, and procedures a few times in the past. He will have one week to complete the assignment.

Code: 1, 9, 12, 16, 18, 25, 30, 36, 40, 45

2. Preliminary Adjustment to a New Electronic Calculator

Given the assignment of adjusting to the work sequences and procedures required by an electronic program calculator, the individual arranges to use the calculator of another business concern at that concern's place of business. The purpose of the assignment is to update the individual's knowledge and skills. The present equipment used provides many similarities in procedures or work sequences; and the student or employee has been required to shift to new equipment, work sequences, and procedures many times in the past. Arrangements for interviews and coaching from employees of a company or business currently using the equipment are made. A written report is filed upon completion of the assignment. The student will have ____ hours to complete the assignment.

Code: 3a, 8, 11, 16, 21, 27, 31, 34, 43

2
ONDITIONS

. GIVEN THE FOLLOWING ASSIGNMENT OF ADJUSTING QUICKLY TO THE WORK SEQUENCES AND PROCEDURES BROUGHT ABOUT BY ONE OF THE FOLLOWING PIECES OF NEW EQUIPMENT

1. Word processing system (For example: dictating-transcribing equipment and magnetic or paper tape typewriters)
2. Computer data manipulating device
   a. Input
   b. Output
   c. Input and Output
   d. Storage
   e. Retrieval
3. Electronic calculator
   a. Program feature
   b. Manually operated
4. Microfilm system
5. Microfiche system
6. Telecommunication transceiver
7. Other_____

B. WITH CURRENT EQUIPMENT IN USE HAVING THIS LEVEL OF SIMILARITY IN PROCEDURE AND WORK SEQUENCES

8. Many similarities
9. Few similarities
10. No similarities

C. AND THIS LEVEL OF CONFIDENCE IN SHIFTING FROM FAMILIAR TO NEW EQUIPMENT

11. Shifted many times previously
12. Shifted only a few times previously
13. Has never shifted in the past

D. SUCH EQUIPMENT TO BE ACQUIRED BY

14. Rental from service company
15. Purchase from machine company
16. Borrowing from machine or other company
17. Other_____

E. AND EQUIPMENT OPERATION TO BE LEARNED

18. At school or place of employment
19. At rental company
20. At machine manufacturer's sales office
21. In a business office
22. Other_____

F. WITH THE PROCEDURES AND WORK SEQUENCES TO BE DRAWN FROM

23. Reference manuals
24. Company work guides
25. Interviews with machine company representatives
26. Flow charts
27. Interviews with businesses using new equipment
28. Other_____

G. AND USING THE FOLLOWING METHOD

29. Demonstration by company or business using new equipment
30. On-the-job training furnished by equipment company
31. Coaching by company or school employee familiar with equipment
32. Self-instruction
33. Other_____

H. FOR THE PURPOSE OF

34. Updating individual's skills and knowledge
35. Promotion or advancement
36. Increasing productivity
37. Retraining
38. Increase in salary
39. Other_____

I. COMPLETION OF ASSIGNMENT TO BE DETERMINED BY

40. Performance examination passed by employee or student
41. Oral questioning of student or employee
42. Written examination administered to employee or student
43. Written report furnished by employee or student
44. Other

J. TIME ALLOTMENT FOR THE ASSIGNMENT BEING

45. Unspecified
46. Predetermined

B2

TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
1. Acquires (I-3.03)* an awareness of need for adjusting to new equipment	a. Film concerning technological changes affecting office workers was viewed b. User or manufacturer's sales offices were visited and features of new machines were described c. Changes in new machines were noted
2. Analyzes (III-1.01) his need to adjust	a. Present knowledge and skills were recognized as insufficient b. Desire to operate new equipment was expressed
3. Familiarizes (II-2.09) himself with the equipment	a. Equipment was located b. A procedure or sequence was obtained or constructed c. Method of operation was observed or discussed d. Procedure or sequence was attempted e. Assistance and direction was received as necessary f. Desire to proceed was expressed
4. Performs (III-3.07) on the equipment	a. The procedures or sequences were reviewed or revised b. Application of procedure or sequence to problem was practiced c. Additional assistance as needed or requested was obtained. If further modification was needed, steps 4a and b were repeated d. Operation of equipment without further modification of procedure or work sequence was learned
5. Acknowledges (II-3.03) that he has learned to operate the equipment	a. Procedure was demonstrated b. Acceptance of demonstration was expressed by peers
6. Reports (II-1.07) on his feelings toward the assignment	a. Efficient operation of the machine was recognized as a means of 1. increasing productivity 2. raising company output b. Problems in adjusting were discussed with teacher, office workers, or peer group c. Better procedures were described as necessary

* Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers.

B4 ABILITY TO PERFORM ADEQUATELY IN ONE SYSTEM, SWITCH TO ANOTHER SYSTEM AND PERFORM ADEQUATELY, AND THEN SWITCH BACK AND PERFORM ADEQUATELY AGAIN. (Total job flexibility)

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Switching to a task in another department

Given the assignment of switching from working in the filing department to operating the addressograph machine in the mailing department for the purpose of increasing the employee's value to the business, the worker receives coaching from one of the mailroom employees. There are few similarities between his usual task and the new task, and he has not been shifted before. This switch is brought about by a change in work load. The individual is expected to perform the assignment as well as an individual who would perform the task occasionally. No time limit is specified on this assignment, and the student is to submit a written report at the completion of the assignment.

Code: 1, 8, 13, 19, 23, 27, 31, 33, 35

2. Switching from one department to another

Given the assignment of rotating from the accounting department to a task in the purchasing department with many similarities between jobs, the individual is given formal training until he can perform this function with the same ability as those who regularly perform the task. The purpose of the assignment is to increase the promotional potential of the employee. He has not been shifted to an unfamiliar task before. The individual will be required to demonstrate his skill at the new job.

Code: 1, 9, 15, 18, 26, 31, 32, 35

B4
CONDITIONS

A. GIVEN THE ASSIGNMENT OF PERFORMING ADEQUATELY IN ONE AREA, SWITCHING TO AN UNFAMILIAR AREA AND PERFORMING ADEQUATELY, AND THEN SWITCHING BACK TO ORIGINAL AREA AND PERFORMING ADEQUATELY (JOB FLEXIBILITY)

1. From one department to another
2. From one machine to another
3. From manual to automated system
4. From one automated to another automated system
5. From a manual to another manual system
6. Other_____

B. WITH CAUSE FOR CHANGE BEING

7. Directive from superior
8. Change in work load
9. Job rotation
10. Shift change
11. Advancement
12. Other_____

C. FOR THE PURPOSE OF

13. Increasing employee's value to business
14. Lessening effect of loss of an employee to the business
15. Increasing promotional potential of employee
16. Other_____

D. USING THE FOLLOWING METHODS

17. Self-instruction
    a. Company procedural manuals
    b. Programmed learning
    c. Job instruction sheets
    d. Manufacturers' equipment manuals
    e. Other_____
18. Formal and informal training on related jobs
19. Coaching by a designated employee
20. Other_____

E. RESULTS TO BE REPORTED BY

21. Demonstration
22. Oral questioning by teacher
23. Written report furnished by student
24. Written evaluation by peers observing student
25. Other_____

F. WITH THIS LEVEL OF SIMILARITY BETWEEN THE AREAS

26. Many similarities
27. Few similarities
28. No similarities

G. AND THIS LEVEL OF CONFIDENCE IN SHIFTING FROM THE FAMILIAR TO THE UNFAMILIAR

29. Shifted many times previously
30. Shifted only a few times before
31. Never shifted before

H. FOR THIS LEVEL OF COMPETENCY ON UNFAMILIAR TASK

32. Has knowledge and skill comparable to the employee who normally performs the task
33. Has knowledge and skill comparable to the employee who occasionally performs the task; i.e., in emergency, during lunch hour
34. Can perform the task only under close supervision

I. TIME ALLOTMENT FOR THE TASK BEING

35. Unspecified
36. Predetermined

B4

TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
1. Acquires (I-3.03)* an awareness of need for self job flexibility	a. Company employees were asked what jobs or duties they felt they could perform other than their current position b. The employees were asked to state what benefits they felt would be gained by being a flexible employee
2. Demonstrates (II-2.12) ability in present system	a. Ability at present position was demonstrated and considered adequate
3. Compares (I-4.0) duties in previous system or task to duties in new system or task	a. Employees presently involved with system or task were interviewed and observed b. Company work guides concerning system or task were consulted c. Available media were reviewed
4. Adapts (I-8.01) to new system or task	a. Work station was located b. Application of information acquired in 3a and b above was practiced c. Assistance and direction was obtained as necessary
5. Demonstrates (II-2.12) performance at new task or in new system	a. Additional practice was completed b. Employees were referred to 4c above if further assistance and direction was needed c. Performance without further modification was demonstrated
6. Performs (III-3.07) prior system or task	a. Performance in original system was reviewed as necessary b. Performance in prior system, or at prior task, was redemonstrated
7. Reports (II-1.07) feelings on assignment	a. Problems of job flexibility were discussed with teacher and peer group

* Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers.

C3 PERFORMANCE GOALS FOR RECOGNIZING THE EFFECT OF INACCURATE DATA ON SUCCEEDING STEPS IN A TASK

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Tracing the effect of an error in payroll procedure

Given the assignment of analyzing the effect of a pay rate error found on the payroll record of one employee on the subsequent payroll procedures, the individual obtains the record from the payroll department and studies a flowchart to trace future processing of the record. The effect of the error is to be submitted to co-workers in a written report to instruct them of the effect of this type of error. The individual has the ability to read flowcharts. No time is specified.

Code: 2, 15, 24, 27, 31, 35, 37

2. Analyzing the effect of an error in processing a sales invoice

Given the assignment of tracing the effect of an inaccurate quantity on a sales invoice to determine its effect on subsequent procedures, the individual obtains the invoice from the sales department and consults management with reference to feedback from customers resulting from prior inaccurate sales invoices. The individual is to make an oral recommendation to his supervisor concerning a control device to eliminate this type of error. The individual is skillful in eliciting information from others and will have three hours to complete the task.

Code: 4, 18, 23, 29, 33, 36, 38

23
ONDITIONS

. GIVEN INACCURATE DATA IN ONE OF THE FOLLOWING DOCUMENTS, THE INDIVIDUAL IS TO RECOGNIZE THE EFFECT ON SUCCEEDING JOBS

1. Ledger
2. Payroll record
3. Inventory record
4. Invoice
5. Requisition
6. Memorandum
7. Cards
8. Magnetic file
9. Paper tape
10. Other_____

B. DOCUMENT TO BE ACQUIRED FROM ONE OF THE FOLLOWING DEPARTMENTS

11. Accounting
12. Data Processing
13. Inventory
14. Maintenance
15. Payroll
16. Personnel
17. Purchasing
18. Sales
19. Shipping and receiving
20. Supply
21. Other_____

C. FOR THE PURPOSE OF

22. Improving ability to trace errors
23. Recommending control devices to eliminate errors
24. Instructing co-workers on effect of errors
25. Motivate self and co-workers to work accurately
26. Other_____

D. AND USING THE FOLLOWING METHOD

27. Following system flowchart to trace future processing
28. Interviewing personnel concerning output prepared from data they receive
29. Consulting management with reference to feedback resulting from inaccurate reports
30. Other_____

E. TO BE REPORTED IN THE FORM OF

31. Written report
32. Visual display
33. Oral report
34. Other_____

F. TIME ALLOTMENT FOR THE TASK BEING

35. Unspecified
36. Predetermined

G. WITH THIS ENABLING BEHAVIOR

37. Ability to read a flowchart
38. Ability to elicit information
39. Ability to use reference manuals
40. Other_____

C3 TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
1. Acquires (I-3.03)* awareness of an error	a. Error was presented or discovered
2. Obtains (I-3.03) document that contains an error	a. Document containing error was obtained
3. Traces (I-10.02) error through the system	a. Each step in the system influenced by the error was noted b. Processing of each step in the system was performed and listed
4. Traces (I-10.02) correct data through the system	a. Correct data was substituted for error b. Processing of each step in the system was performed and listed
5. Assesses (III-4.03) how error effects each succeeding step	a. The results of 3b and 4b above were compared in detail b. Differences between 3b and 4b were noted
6. Reports (II-1.07) results of findings	a. Results were reported
7. Reports (II-1.07) on feelings of assignment	a. The importance of the ability to recognize inaccurate data and take appropriate steps was discussed

* Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers.

D3 ABILITY TO ELICIT INFORMATION FROM OTHERS WHO NEED NOT COOPERATE AND HENCE MUST OFTEN BE PERSUADED TO COOPERATE.

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Office caller

Given the problem of eliciting information from an unknown office caller, the elicitor questions the caller to determine his identity (name, title, affiliation) and reason for the visit for the purpose of taking appropriate action, such as making an appointment, obtaining a business card, answering a question, making a record of the request, etc. The information was elicited in such a way that three evaluators would rate the performance as acceptable.

Code: 13, 43, 46, 54, 66

2. Credit information

Given the assignment of obtaining by telephone credit information from a bank about a customer, the elicitor completes a preprinted investigation form for the purpose of screening the customer for a charge account. The requested information was registered completely, accurately, and legibly. Few, if any, negative attitudes were exhibited or comments made and positive attitudes were exhibited and reinforcing comments made.

Code: 1, 36, 44, 53, 60

3. Policy

Given the problem of eliciting information from an immediate superior about authority to commit the company to buy a computer, the elicitor discusses with the superior what person has the final authority to purchase the computer and the procedures to follow in making the necessary feasibility study. The elicitor could make an adequate record of the discussion.

Code: 29, 39, 46, 54, 66

D3
CONDITIONS

A. GIVEN THE FOLLOWING ELICITING-REGISTERING ASSIGNMENT IN SECURING INFORMATION ABOUT

Customers
- 1. Customer's credit rating
- 2. Sales to customers
- 3. Customer's profile
- 4. Other_____

Personnel
- 5. Personal data
- 6. Payroll information
- 7. Job title of employee
- 8. Attitudes, habits, and needs of employees
- 9. Others outside the organization
- 10. Vendors
- 11. Institutions
- 12. Governmental agencies
- 13. Others_____

Task
- 14. Description
- 15. Length
- 16. Sources of data
- 17. Time schedule for completion
- 18. Exceptions to normal routine
- 19. Degree of familiarity
- 20. Equipment needed
- 21. Other_____

Regulations
- 22. Legal
- 23. Company
- 24. Other_____

Policy
- 25. Tardiness
- 26. Absenteeism
- 27. Working conditions
- 28. Vacation
- 29. Delegation of authority
- 30. Assignment of responsibility
- 31. Public relations
- 32. Customer relations
- 33. Other_____

B. DRAWN FROM THE FOLLOWING SOURCE

- 34. Customer
- 35. Vendor
- 36. Institutions
- 37. Governmental agencies
- 38. Consultants and contractors
- 39. Superior
- 40. Co-worker
- 41. Subordinates
- 42. Staff
- 43. Others_____

C. USING THE FOLLOWING METHODS

Questioning
- 44. Form guided (preprinted form)
- 45. Procedure guided (predetermined process)
- 46. Situation guided

Overt action
- 47. Display
- 48. Demonstration
- 49. Example
- 50. Combination of above
- 51. Other_____

D. AND THE FOLLOWING EQUIPMENT

For Eliciting
- 52. Data communications devices
- 53. Telephone (video & Audio)
- 54. None
- 55. Other_____

For Registering
- 56. Typewriter
- 57. Manual
- 58. Data communication services
- 59. Other_____

E. FOR THE FOLLOWING PURPOSES

- 60. Screening
- 61. Data collecting
- 62. Confirming
- 63. Analyzing
- 64. Storing
- 65. Manipulating: calculating, refining,et
- 66. Taking appropriate action
- 67. Other_____

TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
1. Registers (I-10.05)* the initial information given.	a. The elicitor made a record of the initial information given.
2. Analyzes(III-1.01) the information to determine whether sufficient information has been given to interpret or rephrase the problem.	a. The problem was or was not recognized.
3. Analyzes(III-1.01) discussion with the elicitee to determine his role.	a. The elicitee gave detailed information about his role.
4. Establishs(III-3.05) rapport with elicitee if necessary.	a. The elicitor exhibited no obvious negative attitudes. b. The elicitor exhibited obvious positive attitudes.
5. Selects(I-3.09) the method to elicit further information. a. Asks(II-1.14) for information to clarify the problem. b. Formulates(III-1.04) a plan to elicit additional information.	a. If the problem was not recognized, information was obtained to recognize it. b. A form-guided, procedure-guided, situation-guided or combination plan was adopted. c. A check list, demonstration, display, or other appropriate action was used.
6. Actuates(III-3.0) the plan.	a. The plan was carried out. b. Required modifications were made in the plan. c. The plan selected was an adequate plan; the elicitor was able to obtain all needed information.
7. Designs(III-1.04) a plan to register the data or information, including the equipment needed.	a. The plan outlined the method and listed equipment needed for registration.
8. Registers(I-10.05) the information.	a. The requested information was registered completely, accurately, and legibly. b. Modifications were made in the registering plan.
9. Analyzes(III-1.01) the registered information.	a. The format was acceptable. b. The information was rearranged in final form.
10. Evaluates(III-4.03) the eliciting-registering process.	a. The elicitor conducted a self-evaluation of the eliciting-registering process.

* Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers.

F3 ABILITY TO FORMULATE PLANS FOR COLLECTION, PROCESSING, STORAGE, AND RETRIEVAL OF INFORMATION TO MEET THE NEEDS OF THE ORGANIZATION

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Formulating a plan for collection, processing, storage, and retrieval of information about payroll

Given the assignment of formulating a plan for collecting, processing, storing, and retrieving information about payroll for the purpose of adjusting the present system to incorporate new data processing equipment, the individual will observe the payroll records and collect the necessary data by studying payroll reports currently used by the business. The data will then be processed using the new electronic data processing equipment and stored on magnetic discs. When necessary, retrieval of the information stored can then be made by computer printout. After completing the task, the individual will submit a written report. He has never performed this task before, and there is no specified time allotted for performing the task.

Code: 3a, 9, 13d, 16, 26, 36, 42, 45, 50, 52

2. Formulating a plan for collection, processing, storage, and retrieval of information for purchasing supply sources

Given the assignment of formulating a plan for collecting, processing, storing, and retrieving information for purchasing supply sources for the purpose of improving the present system, the individual will discuss purchasing needs with personnel in the purchasing department and use directories of supply sources to determine those sources that could supply the needs. The results of the directory search are to be processed on an electric typewriter and submitted as a report. This report is then to be microfilmed for storage for later retrieval by microfilm viewer. The individual has never performed this task before and will have twelve hours to complete the task.

Code: 1a, 8, 13f, 17, 25, 34, 40, 45, 51, 52

NDITIONS

GIVEN THE ASSIGNMENT OF FORMULATING PLANS TO COLLECT, PROCESS, STORE, AND RETRIEVE INFORMATION FOR ONE OF THE FOLLOWING SYSTEMS

1. Purchasing
   a. Supply sources
   b. Ordering
   c. Shipping and receiving
   d. Storing and inventory
   e. Other_____
2. Marketing
   a. Advertising
   b. Market research
   c. Credit and collection
   d. Product sales
   e. Delivery
   f. Other_____
3. Financial accounting
   a. Payroll
   b. Accounts receivable
   c. Accounts payable
   d. Inventory records
   e. Cash records
   f. Other_____
4. Cost accounting
   a. Raw materials
   b. Work in process
   c. Finished goods
   d. Other_____
5. Employee relationships
   a. Recruitment and employment
   b. Fringe benefits
   c. Salary administration
   d. Industrial training
   e. Union
   f. Other
6. Corporate relationships
   a. Subsidiaries
   b. Federal-State reporting
   c. Contract negotiations
   d. Lobbying
   e. Other_____
7. Other_____

B. FOR THE PURPOSE OF

8. Improving present system
9. Adjusting present system to new information technology and equipment
10. Planning a system for a new business activity in the firm
11. Reducing cost
12. Other_____

C. AND THE SOURCES OF INFORMATION ABOUT THE SYSTEM TO BE DRAWN FROM

13. Internal sources
    a. Charts and diagrams
    b. Reports, i.e., job analysis
    c. Manuals, i.e., procedures
    d. Observation records
    e. Questionnaire findings
    f. Notes or minutes, i.e., meetings or discussion groups
    g. Other_____
14. External sources
    a. Systems in other offices
    b. Consultants
    c. Survey of current business publications
    d. Other_____

D. USING ONE OF THE FOLLOWING SOURCES FOR COLLECTION OF DATA

15. Business forms
16. Reports
17. Directories
18. Catalogs
19. Correspondence
20. Inventory
21. Financial data
22. Other_____

E. AND USING ONE OF THE FOLLOWING PROCESSING METHODS

23. Pen and paper
24. Non-electric equipment
25. Electric equipment
26. Electronic equipment
27. Other_____

F. THE DATA TO BE STORED IN ONE OF THE FOLLOWING

28. Vertical or horizontal files
29. Rotary files
30. Side-filing equipment
31. Reciprocal files
32. Motorized files
33. Visible files
34. Microfilm
35. Microfiche
36. Data processing files on tapes, cards, or discs
37. Records center
38. Other_____

G. RETRIEVING BY MEANS OF ONE OF THE FOLLOWING

39. Manual search and find
40. Microfilm printout or viewer
41. Tabulating equipment output
42. Computer printout
43. Cathode-ray tube
44. Other_____

H. TO BE REPORTED IN THE FORM OF

45. Written or typed report
46. Flowcharts
47. Organization charts
48. Work distribution charts
49. Other_____

I. WITH TIME ALLOTTED BEING

50. Unspecified
51. Predetermined

J. HAVING THIS LEVEL OF FAMILIARITY

52. New task, never performed before
53. Performed a few times before
54. Performed many times before
55. Other_____

F3

TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
1. Receives (I-3.03)* a request to formulate a plan for collection, processing, storage, and retrieval of information	a. Details of request were noted
2. Previews (I-3.05) present system	a. Management and employees currently involved with the business activity were interviewed b. Sources of data were noted c. Present forms in use were reviewed d. Notes of current procedures were made e. Current business publications in reference to the task were consulted f. Systems in other businesses were reviewed
3. Procures (I-3.03) requirements for new system	a. Management was interviewed to determine information requirements b. Changes in reporting requirements were noted c. Timing of reports was scheduled
4. Devises (I-5.02) procedural plans	a. System flowchart was prepared b. New forms were designed to meet reporting requirements c. Report schedules were constructed d. Plans for parallel runs were outlined
5. Submits (I-12.14) plan for review and suggestions	a. Plan was submitted to management and supervisors for review and suggestions b. Comments and suggestions were noted
6. Revises (I-5.05) plan as necessary	a. Changes to plan were made as a result of suggestions above
7. Predicts (III-1.05) utility of the plan	a. Samples of source data were obtained b. Desired results were listed c. Samples were walked through the plan d. Desired results were compared with actual results
8. Devises (I-5.02) and submits (I-12.14) final plan	a. Revised plan was approved. If not approved, return to 5b above

* Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers

G1 ABILITY TO CONSTRUCT BASIC FLOWCHARTS FOR PROJECTS, SYSTEMS, OR SUBSYSTEMS FOR PURPOSES OF PLANNING, ANALYZING, IMPLEMENTING, CONTROLLING, AND BUDGETING.

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Preparing a flowchart for office layout

Given the assignment of flowcharting (the project of designing) an office layout for the purpose of planning the arrangement of a new office, the individual interviews an office-building architect to obtain and organize all available details. The individual is to use templates, cutouts, and chart paper to present the results in the form of a work-flow process chart. The individual has studied but never constructed such a flowchart and will have four days to complete the task.

Code: 1a, 4, 15, 19, 25, 38, 41, 43

2. Flowcharting the management information production control system

Given the assignment of flowcharting the management information production control system for the purpose of analyzing weaknesses in the system, the individual obtains and studies the company procedural manual which contains most of the details in reference to information flow. The individual is to prepare a movement diagram on a company prepared chart. He has had limited experience in constructing this type of flowchart and will have three days to complete the task.

Code: 2a(1), 5, 12, 21, 26, 31, 41, 44

NDITIONS

GIVEN THE ASSIGNMENT OF CONSTRUCTING A BASIC FLOWCHART FOR ONE OF THE FOLLOWING

1. Project
   a. Designing office layout
   b. Management information flow study
   c. Other_____
2. System
   a. Management information
      (1) Production control
      (2) Accounting
   b. Corporate research
      (1) Sales analysis
      (2) Quality control
   c. Other_____
3. Subsystem
   a. Purchasing
   b. Shipping and receiving
   c. Inventory records
   d. Accounts receivable
   e. Payroll
   f. Accounts payable
   g. Cash transactions
   h. Other_____

. FOR THE PURPOSE OF

4. Planning
5. Analyzing
6. Controlling
7. Implementing
8. Budgeting
9. Other

. WITH THE DATA TO BE DRAWN FROM

10. Existing charts
11. Reports, i.e., job analysis
12. Manuals, i.e., procedures
13. Notes of minutes, i.e., meetings, discussion groups
14. Observation records
15. Interview reports
16. Questionnaire findings
17. Textbook
18. Other_____

D. THE DEGREE OF DATA COMPLETENESS BEING

19. All details available, organized
20. All available but not organized
21. Most details available
22. Some details available
23. No details available
24. Other_____

E. TO BE REPORTED IN THE FORM OF

25. Work-flow process chart
26. Movement diagram
27. Procedure flowchart
28. Left-hand and right-hand chart
29. Operator-machine activity chart
30. Other_____

F. USING THE FOLLOWING SUPPLIES

31. Commercially or company-prepared charts
32. Graph paper
33. Columnar paper
34. Blueprint of space
35. Templates
36. Cutouts
37. Three-dimensional model of physical units
38. Any combination of above
39. Other_____

G. TIME ALLOTMENT FOR THE TASK BEING

40. Unspecified
41. Predetermined

H. WITH KNOWLEDGE OR EXPERIENCE IN FLOWCHARTING BEING

42. Never studied or constructed
43. Studied but not constructed
44. Studied and has very limited experience in constructing
45. Studied and has experience in constructing
46. Other_____

G1

TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
1. Acquires (I-3.03) an awareness of the value of a flowchart	a. Those that construct and use flowcharts in their work were interviewed b. Individuals were questioned concerning values and advantages of flowcharts c. The following values were discussed and noted: 1. Ease of following a compact pictorial diagram 2. Ease in detecting different processing steps 3. Ease in planning for merging operations 4. Aid in planning for time and costs
2. Previews (I-3.05) types of flowcharts in current use	a. Type of flowcharts used by individuals in task 1 above were noted b. Books containing sample of flowcharts were obtained and reviewed c. Current flowcharts used by company were obtained and reviewed d. Flowchart techniques manuals were obtained and studied
3. Gathers (I-3.02) materials necessary in preparation of flowchart	a. Materials and supplies to be used in flowchart construction were obtained
4. Designs (I-5.02) preliminary flowchart	a. Sample of flowchart to be used as a guide was selected from task 2 above b. Sample flowchart selected was modified as necessary to meet our situation
5. Submits (I-12.14) preliminary flowchart for review and suggestions	a. Preliminary flowchart was submitted to supervisors for review and suggestions b. Suggestions and criticisms were noted
6. Revises (I-8.09) flowchart as necessary	a. Changes to preliminary flowchart were made as a result of suggestions and criticisms
7. Predicts (III-1.05) utility of the flowchart	a. Sample of the data was obtained b. Desired results were listed c. Flowchart was walked through using the sample data d. Desired results were compared with actual results
8. Submits (I-12.14) revised flowchart for approval	a. Revised flowchart was submitted to supervisor for final approval
9. Reports (II-1.07) on feelings of task	a. Problems encountered while constructing and testing flowchart were reviewed b. Uses of this flowchart were discussed with supervisors and fellow workers

* Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers.

G8 ABILITY TO LANDSCAPE AN OFFICE OR ASSIST IN LANDSCAPING AN OFFICE TO COORDINATE COLOR, EQUIPMENT, FURNITURE, AND LIGHTING WITH INFORMATION FLOW, WORKER SATISFACTION, AND JOB EFFICIENCY

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Planning lighting environment

Given the assignment of planning the lighting environment for an office, the individual identifies the natural and artificial light sources. He reads current business publications in order to determine lighting requirements and standards for each work area. The individual then measures the present natural and artificial light with a light meter, (compares the results with suggested lighting standards) and writes a report with recommendations for improving the lighting environment. The purpose of the task is to increase job efficiency. No details are available, and the individual has not performed a similar task before.

Code: 3, 11, *15g,* 16a, 20, 31, 38, 42, 46

2. Designing an office layout

Given the assignment of designing an office layout, the individual studies complete, well-organized reports containing information about the available space, form of organization, flow charts, type and number of personnel and of furniture and equipment. Other offices are visited to study their office layout. Templates are used to draw the floor plan according to established methods. An office layout chart is drawn with the goal of improving information flow. The individual has designed an office layout before.

Code: 1, 9, *15j, *16d, 17, 21, 34, 44, 47

*These come from the same condition

G8
CONDITIONS

A. GIVEN THE ASSIGNMENT OF LANDSCAPING AN OFFICE TO COORDINATE ONE OF THE FOLLOWING

1. Office layout
2. Color environment
3. Lighting environment
4. Furniture and equipment
5. Sound conditioning
6. Air control and temperature
7. Work flow
8. Other_____

B. FOR THE PURPOSE OF

9. Improved information flow
10. Improved customer relations
11. Increased job efficiency
12. Worker satisfaction
13. Improved supervision
14. Other_____

C. CONSIDERING THE FOLLOWING FACTORS AND SOURCES

15. Internal source data
    a. Physical features of space
    b. Form of organization, i.e., centralization, decentralization
    c. Work flow charts and reports
    d. Type and number of personnel
    e. Type and quantity of furniture and equipment
    f. Color of ceilings, walls, floors, furniture and equipment
    g. Level of natural and artificial light
    h. Noise factors
    i. Flow of traffic
    j. Any combination of the above
    k. Other
16. External source data
    a. Survey of current business publications
    b. Office equipment and furniture catalogs
    c. Consultants
    d. Other offices
    e. Annual weather conditions
    f. Any combination of above
    g. Other_____

D. THE DEGREE OF ORIGINAL DATA COMPLETENESS BEING

17. All details available, organized
18. All details available but not organized
18. Some details available
20. No details available

E. USING THE FOLLOWING METHODS

21. Draw a floor plan of available office space to scale
22. Determine functional relationships
23. Determine area requirements for departments and individuals based on number to be accommodated
24. Determine special space requirements, i.e., private offices, conference rooms
25. Make a block assignment of space
26. Make a detailed plan including space allocation, placement of furniture and equipment, partitions, etc.
27. Indicate work flow
28. Consider various color schemes for ceilings, walls, floors, furniture and equipment
29. Determine lighting requirements for each area
30. Consider placement of equipment in relation to natural or artificial light
31. Identify and measure sources of light
32. Propose noise control devices, i.e., acoustical tile, carpeting
33. Other_____

F. USING THE FOLLOWING MATERIALS

34. Templates
35. Cutouts
36. Three-dimensional models
37. Color charts
38. Light meter
39. Decibel measuring device
40. Any combination of above
41. Other_____

G. TO BE REPORTED IN THE FORM OF

42. Written report
43. Recording, dictated
44. Visual displays--charts, models, photographs
45. Other_____

H. THE LEVEL OF TASK FAMILIARITY BEING

46. New task, never done before
47. Task done only a few times before
48. Task done many times previously
49. Other_____

G8

TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
A1. Acquires (I-3.03) an awareness of variations of landscaping an office	a. Visits to several large concerns were made b. Visits to smaller concerns were conducted c. Supervisors were questioned concerning likes and dislikes of their present landscaping d. Feelings of supervisors were noted e. Local interior decorators and architects were interviewed
2. Gathers (I-3.02) resources necessary to begin landscaping	a. Current business publications were obtained and studied b. Office equipment and furniture catalogs were acquired and reviewed c. Equipment specifications were obtained d. Materials and supplies necessary for construction of scale were obtained
3. Draws (I-5.02) scale of office space	a. Available office space was drawn to scale b. Space requirements were recorded c. The following were noted: 1. entrances and windows 2. traffic flow 3. desired work flow 4. color schemes 5. lighting sources and requirements 6. sources of noise and sound control devices d. Space allocation was blocked and cutouts of furniture, fixtures, and equipment were placed
4. Submits (I-12.14) scale for review and discussion	a. Company officers and supervisors were consulted about the landscape b. Suggestions or criticisms were noted
5. Revises (I-8.09) scale as necessary	a. Modifications to preliminary scale were made as a result of suggestions and criticisms b. Revised scale was verified by officers and supervisors c. If further revision was necessary, returned to 4a above
6. Submits (I-12.14) the landscape plan	a. Plan was submitted
7. Reports (II-1.07) feelings on task	a. Problems encountered while planning landscape were reviewed b. Uses of this landscape scale were discussed

* Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers

H1 ABILITY TO OPERATE VARIOUS PIECES OF NEW EQUIPMENT THROUGH SELF-INSTRUCTION OR IN-SERVICE TRAINING (Building confidence for learning to operate new equipment in the future)

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Operating the electronic calculator

Given the assignment of learning to operate the electronic calculator in an equipment company sales office, the individual follows a prescribed course of programmed instruction. The operator has not had experience with any kind of calculator before and will be learning to operate this machine to update his individual skills. It is expected that the individual will be able to gain the knowledge and skill comparable to that of an employee who operate the equipment frequently.

Code: 2, 10, 13c, 18, 23, 28

2. Operating the key punch machine

Given the assignment of learning to operate a key punch machine in his place of employment for the purpose of self-advancement, the individual follows a job instruction sheet. The individual is expected to reach a level of knowledge and skill comparable to that of an employee who uses the equipment occasionally. The operator has had limited experience on the key punch machine.

Code: 3a, 9, 13a, 19, 24, 29

H1
CONDITIONS

A. GIVEN THE FOLLOWING NEW EQUIPMENT TO OPERATE IN THE FUTURE

1. MT/ST or ATS
2. Electronic calculator
3. Computer data manipulation devices
   a. Input
   b. Output
   c. Storage
   d. Retrieval
4. Microfilm
5. Microfiche
6. Aperture cards
7. Telecommunication terminals
8. Other_____

B. WHICH IS LOCATED AT

9. Place of employment
10. Equipment company sales office
11. Other business concern
12. Other_____

C. AND USING THE FOLLOWING METHODS

13. Self-instruction
    a. Job instruction sheets
    b. Equipment manuals
    c. Programmed learning
14. Coaching by a designated employee
15. In-service training
16. Other_____

D. FOR THE PURPOSE OF

17. Increasing company output
18. Updating individual's skills
19. Advancement
20. Job flexibility
21. Preparing employee trainers or coaches
22. Other_____

E. DISPLAYING THIS LEVEL OF COMPETENCY

23. Has knowledge and skill comparable to an employee who operates the equipment frequently, such as daily
24. Has knowledge and skill comparable to an employee who uses the equipment occasionally, such as once or twice a week
25. Identifies the equipment and its functions and can perform fundamental machine operations
26. Can operate the equipment only under close supervision

F. WITH THIS LEVEL OF EXPERIENCE

27. Experience on similar equipment
28. No experience on similar equipment
29. Limited experience on the new equipment
30. No experience on the new equipment

TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
1. Acquires (I-3.03)* an awareness of importance of operating the new equipment	a. Field trip to business using this equipment was arranged and completed b. Equipment in operation was observed c. Discussions with operators of this equipment were held
2. Gathers (I-3.02) reference materials	a. Operator's manuals, job instruction sheets, and other programmed learning materials were obtained and studied
3. Familiarizes (II-2.09) self with new equipment	a. Equipment to be operated was located b. Procedural steps for operation were studied c. Equipment controls or settings were reviewed
4. Performs (III-3.07) operation of new equipment	a. Controls and adjustments were made ready for operation b. Trial operations were performed and checked c. Assistance was requested and obtained as needed d. Further operation was practiced e. Additional assistance was sought and received as necessary f. Operation without further assistance was performed
5. Reports (II-1.07) feelings on task	a. Problems of operating the new equipment were discussed b. Values of equipment to the company were listed.

* Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers.

H2 ABILITY TO OPERATE VARIOUS COMPUTER DATA MANIPULATION DEVICES. (Input, Output, Storage, and Retrieval)

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Operating the IBM 84 Card Sorter

Given the IBM 84 Sorter for arranging a group of 100 punched cards from an accounts receivable file in the proper order as a sorted deck for preparing an accounts receivable schedule, the individual completes the assignment by sorting on the account number field. He has had a little experience on the IBM 82 Card Sorter and is to gain a level of knowledge and skill comparable to that of an employee who operates the sorter frequently.

Code: 11, 23, 34, 44, 52, 57

2. Operating the IBM 85 Collator

Given the IBM 85 Collator, the individual is to select from a deck of punched cards in an accounts receivable file those cards of account customers having a balance in excess of $100. He has had limited experience on the collator and is to gain a level of knowledge and skill comparable to an employee who operates the collator occasionally, such as once a week.

Code: 15, 23, 36, 44, 53, 59

H2
CONDITIONS

A. GIVEN THE FOLLOWING COMPUTER DATA MANIPULATING DEVICE TO OPERATE

1. Calculator
2. Adding machine
3. Typewriter
4. Posting machine
5. Accounting machine
6. On-line typewriter
7. Card-read punch unit
8. Punched tape reader
9. Tape unit or recorder
10. Printer
11. Card sorter
12. Verifier
13. Disc drive
14. Reproducer
15. Collator
16. Interpreter
17. Tape drive
18. Card to tape converter
19. Data phone
20. Central Processing Unit console
21. Summary set up
22. Other_____

B. SOURCE OF DATA BEING

23. Punched card
24. MICR document
25. Magnetic tape
26. Paper tape
27. Magnetic file
28. Printed document
29. Internal memory
30. Mark sense document
31. Other_____

C. FOR THE PURPOSE OF

32. Arranging data in proper sequence for further processing
33. Storing data for further use
34. Preparing desired report
35. Preparing payroll checks
36. Selecting specific data for further processing
37. Duplicating data
38. Transferring data
39. Providing operational instructions to computer
40. Decoding data
41. Checking accuracy of data
42. Other_____

D. OUTPUT BEING

43. Print out
44. Sorted or selected deck
45. Punched card
46. Magnetic file
47. Magnetic ledger
48. Punched paper tape
49. Cathode ray tube display
50. Audio playback
51. Other_____

E. AND THIS LEVEL OF COMPETENCY DESIRED

52. Has knowledge and skill comparable to an employee who operates the data manipulating device frequently, such as daily
53. Has knowledge and skill comparable to an employee who operates the data manipulating device occasionally, such as once or twice a week
54. Identifies the data manipulating device and its functions and can perform fundamental manipulating operations
55. Can operate the data manipulating device only under close supervision
56. Other_____

F. WITH PRIOR EXPERIENCE BEING

57. Some experience on similar data manipulating devices
58. No experience on this or similar data manipulating devices
59. Limited experience on this data manipulating device
60. Other_____

H2 TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
A1. Acquires (I-3.03) an awareness of importance of data manipulating device	a. Visit to processing center was arranged b. Data manipulating device was observed in operation c. Discussions with operators of data manipulating device were held d. Benefits over manual procedures were discussed e. Purposes of various manipulating devices were listed
2. Gathers (I-3.02) reference materials	a. Textbooks, company work guides, and machine manufacturers' manuals were obtained and studied
3. Familiarizes (II-2.09) himself with the data manipulating device	a. Equipment to be operated was located b. Operation of the equipment was discussed c. Procedural steps for operation were reviewed d. Equipment controls or settings were reviewed
4. Performs (III-3.07) on data manipulating device	a. Equipment controls or settings were readied for operation b. Trial runs were performed and checked for accuracy and completeness c. Assistance was requested and obtained as needed d. Operation of machine was practiced. Direction was received as necessary e. Operation without further assistance or direction was performed
5. Reports (II-1.07) feelings on task	a. Problems of operating the data manipulating device were discussed b. Suggestions for improvement of procedure in learning to operate the manipulating device were listed

* Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers.

H3 ABILITY TO OPERATE MICROFILM AND MICROFICHE EQUIPMENT

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Operating the Microfilm Camera

Given the assignment of operating the microfilm camera for the purpose of preparing microfilm copy, the individual will draw the information from company letters with the output being in the form of microfilm. The individual has had no course background and there will be no specified time limit to gain a knowledge and skill comparable to an employee who operates the equipment once a week.

Code: 2, 12, 16, 19, 24, 27, 30

2. Operating the Microfiche Reader/Printer

Given the assignment of operating the microfiche reader/printer for the purpose of making multiple hard copies, the individual will draw the information from microfiche with the output being in the form of hard readable copies. The individual has taken a records management and filing course and will be given 10 hours to gain a knowledge and skill comparable to an employee who operates the equipment daily.

Code: 3, 11, 14, 20, 23, 26, 29

(H3
(CONDITIONS

A. GIVEN THE FOLLOWING MICROFILM OR MICROFICHE EQUIPMENT TO OPERATE

1. Microfilm reader/printer
2. Microfilm camera
3. Microfiche reader/printer
4. Microfiche duplicator
5. Microfilm viewer
6. Other_____

B. FOR THE PURPOSE OF

7. Projecting Microfilm and Microfiche
8. Searching Microfilm and Microfiche
9. Storing records
10. Retrieving records
11. Making hard copy
12. Preparing Microfilm and Microfiche
13. Making multiple hard copies

C. SOURCE DOCUMENT BEING

14. Microfiche
15. Microfilm
16. Documents
17. Other_____

D. OUTPUT BEING

18. Microfiche
19. Microfilm
20. Hard copy
21. Projected copy
22. Notes_____

E. DESIRING THIS LEVEL OF PERFORMANCE

23. Knowledge and skill comparable to an employee who operates the equipment daily
24. Knowledge and skill comparable to an employee who operates the equipment once a week
25. Identifies the equipment and its functions and can perform fundamental machine operations

F. TIME ALLOTMENT FOR TASK BEING

26. Predetermined
27. Unspecified

G. ENABLING BEHAVIOR BEING

28. Office procedures course
29. Records management and filing course
30. No course background
31. Other

H3 TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
1. Receives (I-3.03)*a request for storing or retrieving information	a. Details of request were noted
2. Distinguishes (I-4.02) which piece of equipment will be needed to complete the operation	a. According to details of request, equipment was selected
3. Acquires(I-3.03) necessary equipment required to complete the operation	a. Equipment was located and readied for operation
4. Searches (I-3.08) for stored microfilm or microfiche, if necessary	a. Microfilm or microfiche file was searched b. Desired microfilm or microfiche was retrieved
5. Obtains (I-3.03) necessary materials and supplies	a. Necessary materials and supplies were obtained
6. Performs (III-3.07) on equipment and designs (I-5.02) output	a. Equipment was operated b. Output was prepared or projected c. Equipment was turned off and covered as necessary
7. Stores (I-11.0) microfilm or microfiche, if necessary	a. Microfilm or microfiche file was searched to find location for storage, if necessary b. Microfilm or microfiche was stored
8. Accomplishes (III-3.04) task	a. Task completion was approved or recognized

* Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers

H4 ABILITY TO ASCERTAIN AND ANALYZE THE CAPABILITIES AND FUNCTIONS OF COPYING MACHINES, DATA REPRODUCTION EQUIPMENT, AND DATA DISPLAY TERMINALS.

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Ascertaining and analyzing the capabilities and functions of the keypunch

Given the assignment of determining the capabilities of a new model keypunch machine to handle an increased work load, the individual goes to a machine company sales office and talks with sales representatives. The individual has never operated or observed this keypunch in operation and is to submit a written report of his findings. He will have two days to complete the task.

Code: 2a, 4, 12, 18, 24, 29, 37, 38

2. Ascertaining and analyzing the capabilities and functions of the cathode ray tube terminal

Given the assignment of determining the capabilities of a cathod ray tube termina to reduce operator time, the individual visits a business concern using the cathode ray tube and interviews personnel operating the tube. The individual has never operated the cathode ray tube, but he has observed it in operation. He will have four hours to complete the task and demonstrate his findings.

Code: 3a, 5, 13, 15, 23, 31, 37, 39

H4
CONDITIONS

A. GIVEN ONE OF THE FOLLOWING PIECES OF EQUIPMENT

1. Copying Machines
   a. Multilith
   b. Ditto
   c. Mimeograph
   d. Thermofax
   e. Other_____
2. Data Reproduction
   a. Keypunch
   b. MT/ST
   c. Reproducer
   d. Computer
   e. Accounting machine
   f. Interpreter
   g. Mark sensing
   h. Optical scanner
   i. Transceivers
   j. Other_____
3. Data Display Terminals
   a. Cathode ray tube
   b. Teletype
   c. Microfilm
   d. Microfiche
   e. On line typewriters
   f. On line printer
   g. Audio response terminal
   h. Other_____

B. TO STUDY AND ANALYZE ITS CAPABILITIES FOR THE PURPOSE OF

4. Handling increased work load
5. Reducing operator time
6. Increasing work load
7. Centralizing services
8. Updating company procedures
9. Reducing operator error
10. Other_____

C. THE EQUIPMENT BEING LOCATED AT

11. Place of employment
12. Machine company sales office
13. Other business concern
14. Other_____

D. AND THE INFORMATION TO BE DRAWN FROM

15. Users
16. Equipment manuals
17. Equipment repairmen
18. Sales representatives
19. Consultants
20. Textbooks
21. Combination of above
22. Other_____

E. USING THE FOLLOWING METHODS

23. Interviews with operators
24. Correspondence with manufacturers
25. a. written
    b. oral
25. Demonstrations by operators or manufacturing representatives
26. Research
27. Combination of above
28. Other_____

F. WITH THE FINDINGS REPORTED

29. In written form
30. Orally
31. By demonstration
32. By audio tapes
33. By filmstrips
34. By films
35. Other_____

G. AND TIME ALLOTTED BEING

36. Unspecified
37. Predetermined

H. HAVING THIS LEVEL OF EXPERIENCE

38. No experience or observation
39. Observed but not operated
40. Operated under close supervision
41. Operated with little or no supervisi
42. Other_____

H4

TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
1. Acquires (I-3.03)*an awareness of the need for studying the capabilities and features of new equipment	a. Business concerns using this piece of equipment were telephoned b. Advantages over current equipment being used were discussed with operators c. Arrangements were made for a subsequent visit to observe equipment in operation
2. Gathers (I-3.02) reference materials	a. Machine manufacturers' manuals were obtained b. Current business publications in reference to the new equipment were obtained c. Management was interviewed to determine information needed and the form in which it should be reported
3. Assesses (III-4.03) the capabilities and features of the machine or equipment	a. Reference manuals and business publications were studied and the tasks or operations the machine or equipment will perform were listed b. List was shown to users and equipment manufacturing representatives for additions and comments c. Changes were made to the list as necessary
4. Appraises (III-4.03) equipment or machine in operation	a. Visit to user arranged in 1c above was completed b. All operations listed in task 3 above were noted c. Questions were asked as necessary
5. Reports (II-1.07) findings	a. Recommendations were made to management regarding the capabilities of this machine
6. Reports (II-1.07) on feelings of task	a. Problems of ascertaining and analyzing the machine or equipment were discussed b. Improved procedures in ascertaining and analyzing capabilities and features of the machine or equipment were listed

* Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers

I3 ABILITY TO CONVERT DATA TO APPROPRIATE CODING SCHEMES.

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Converting a roster of names to unit record cards

Given the assignment of converting a roster of 100 names to coded information on unit record cards, the individual draws from handwritten information and converts the roster into an alpha-numeric code and records the data in the same order which it appears on the source document. The purpose of coding and converting to a new form is to systematize data in the company. The individual has a limited knowledge of theory and limited experience in coding data and will be given 5 hours to complete this project.

Code: 4, 11, 18, 23, 27, 38, 48, 51

2. Converting a roster of creditors or vendors to magnetic tapes

Given the assignment of converting data from a roster of 100 creditors or vendors to coded information on magnetic tapes , the individual draws from typewritten information and converts the roster into a numeric code in the most effective order to be determined by the student. The individual has a knowledge of the theory of coding data but has had no experience in performing the task. He will be given one week to complete the company's phase of converting data for easier handling.

Code: 2, 10, 15, 22, 29, 45, 47, 51

I3
CONDITIONS

A. GIVEN THE FOLLOWING TABLE OF INFORMATION TO CONVERT

1. Employee roster
2. Roster of creditors or vendors
3. Roster of customers
4. Roster of names
5. List of inventory items
6. Roster of classes
7. List of branch offices
8. List of books and bulletins
9. Other_____

B. FROM THIS ORIGINAL FORM

10. Typewritten data
11. Handwritten data
12. Abbreviated data
13. Numeric data
14. Other_____

C. TO THIS CODE

15. Numeric code
16. Abbreviated code
17. Symbol code
18. Alpha-numeric code
19. Color code

D. FOR THE PURPOSE OF RETRIEVAL AND

20. Space saving
21. Simplification of data
22. Ease in handling
23. Systematization of data
24. Uniformity of documents
25. Time saving (speed)
26. Other_____

E. TO BE PLACED IN ONE OF THE FOLLOWING FILE UNITS

27. IBM cards
28. Remington cards
29. Magnetic tapes
30. Punched paper tapes
31. Call number cards
32. Magnetic discs
33. Magnetic ledgers
34. File tabs
35. Labels
36. Directories
37. Other_____

F. IN THIS SEQUENCE

38. Same order as source document
39. Alphabetical order
40. Chronological order
41. Ascending order
42. Descending order
43. Geographically
44. Subject order
45. Any of the above

G. WITH THE INDIVIDUAL'S EXPERIENCE IN CODING DATA BEING

46. Knowledge of theory and experience
47. Knowledge of theory and no experience
48. Limited knowledge of theory and limited experience
49. Limited knowledge of theory and no experience
50. No knowledge of theory and no experience

H. TIME ALLOTMENT BEING

51. Predetermined
52. Unspecified

I3

TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
1. Obtains (I-3.03)*and previews (I-3.05) the table of information	a. The table of information was examined.
2. Selects (I-3.09) what information to convert to a code for retrieval	a. Information to be coded was underscored. b. A logical sequence for coding was determined.
3. Specifies (II-1.08) the number of items in the table to be coded	a. Number of items to be coded was noted.
4. Specifies (II-1.08) the amount of space available on file unit for coding	a. The amount of space available in or on the file units was determined.
5. Previews (I-3.05) the coding schemes of the type selected	a. Books were read and problem was discussed with other people.
6. Selects (I-3.09) appropriate code to use	a. According to the file unit used, the appropriate code was established.
7. Converts (I-8.02) a sample of the information to a code	a. Each pertinent item of data was coded. b. Smallest appropriate coding space was used. c. Data was coded into proper order. d. All coding was completed.
8. Submits (I-12.14) the coding scheme and sample of work for approval	a. Coding scheme was approved or modified.
9. Converts (I-8.02) remainder of information to code	a. Same criteria for Task 7 was used.

* Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers.

I4 ABILITY TO ASSEMBLE AND ARRANGE INPUT DATA FOR PROCESSING.

(The following statements are samples of the kinds of specific performance goals that can be abstracted from the checklist on the following pages. The "Code" refers to the numbered items concerning the conditions.)

1. Assembling and arranging payroll information

Given the assignment of assembling and arranging payroll information, the student obtains the individual earning records through the interoffice mail and arranges them by employee number, name, or code. Using the procedure drawn from interviews with employees currently handling the input data, he is to prepare the original and three duplicated copies of the payroll register by accounting machine on pre-printed forms. The student has had class theory and limited experience with this type data, and there is no specific deadline.

Code: 1, 12, 24, 31, 36, 49, 59, 66, 70, 73

2. Assembling and arranging supply records

Given the assignment of assembling and arranging supply records, the student receives the requisitions by personal delivery from other department and has assistance from employees currently handling the data in preparing a departmental usage report by supply number, name, or code to be distributed to department heads within one day. An original is to be prepared in handwritten form to be photocopied to produce five additional copies. The student has received class instruction and has limited experience in arranging and assembling this input data.

Code: 5, 13, 26, 31, 38, 51, 61, 67, 69, 73

POOR ORIGINAL COPY - BEST
AVAILABLE AT TIME FILMED

14
CONDITIONS

A. GIVEN THE FOLLOWING INPUT DATA TO ASSEMBLE AND ARRANGE FOR PROCESSING

1. Payroll information
2. Sales information
3. Purchase information
4. Merchandise inventory records
5. Supplies records
6. Personnel data
7. General ledger
8. Subsidiary ledger
9. Other_____

B. WITH THE SOURCE DOCUMENT BEING

10. Invoices
11. Time slips
12. Individual earnings records
13. Requisitions
14. Questionnaires
15. Sales slips
16. Letters
17. Office memorandum
18. Ledger accounts
19. Purchase orders
20. Cash register tapes
21. Directory
22. Other_____

C. WHICH IS RECEIVED

23. Through regular mail
24. Through interoffice mail
25. By telephone call from within concern
26. By personal delivery from other department
27. By telephone call from outside the concern
28. From the business files or records
29. Other_____

D. THE ASSEMBLING AND ARRANGING PROCEDURES TO BE DRAWN FROM

30. Flow charts
31. Interview with employees currently handling the input data
32. Interviews with outside consultants
33. Interviews with management
34. Company reference manuals
35. Other_____

E. TO BE ARRANGED

36. By employee number, name, or code
37. By customer number, name, or code
38. By suppliers number, name, or code
39. By inventory or merchandise name, number, or code
40. By date of source document
41. In report form previously established by the business
42. In form determined by reference manuals
43. Other_____

F. FOR THE PURPOSE OF PREPARING

44. Sales analysis
45. Accounts receivable billing
46. Accounts receivable schedule
47. Updated inventory records
48. Accounts payable schedule
49. Payroll register
50. Cost of production report
51. Department usage report
52. Tax register
53. Insurance register
54. Financial statements
    a. Balance sheet
    b. Income statement
    c. Equity statement
    d. Other_____
55. Other_____

I4

G. OUTPUT BEING

56. On punched cards
57. On paper tape
58. On magnetic tape
59. By accounting machine on pre-printed forms
60. By typewriter on pre-printed forms
61. In handwritten form
62. By computer
63. Other_____

H. WITH THIS MANY COPIES REQUIRED

64. Original only
65. Original and ___ carbon copies
66. Original and ___ duplicated copies
67. Original and ___ photocopies
68. Other_____

I. AND DEADLINE FOR COMPLETION TO BE

69. Predetermined
70. Unspecified

J. WITH THE LEVEL OF EXPERIENCE IN ASSEMBLING AND ARRANGING INPUT DATA

71. No class theory or experience with this particular data
72. Class theory and no experience with this particular data
73. Class theory and limited experience with this particular data
74. Class theory and frequent experience with this type of data
75. Other_____

14 TASK TO BE PERFORMED (DIRECTIONS)	CRITERIA TO MEASURE PERFORMANCE
1. Distinguishes (I-4.02)*need for properly assembling and arranging data for processing	a. Incorrect file order was recognized b. Reasons for data rearrangement were discussed
2. Obtains (I-3.03) information useful in assembling and arranging input data for processing	a. Individual employees of the firm were questioned and observed concerning assembling and arranging of input data as necessary b. Notes of work flow and current procedures used were made c. Procedures or sequence outline was made from notes obtained d. Record files were obtained
3. Obtains (I-3.03) the data to be assembled and arranged	a. Source documents were obtained
4. Performs (III-3.07) preparatory steps	a. Mathematical computations on source documents were verified if necessary b. Needed forms and/or supplies needed were obtained
5. Assembles (I-3.02) and arranges (I-1.10) input data	a. Sort program was obtained if necessary b. Records in file were arranged in proper sequence c. Assistance was received as needed d. Input data was assembled e. Mathematical computations on report or procedure were verified f. Terminology, names, addresses, and headings were proofread and verified g. Any detected errors were corrected
6. Submits (I-12.14) assembled and arranged data	a. Data arrangement was approved or rejected. If rejected, additional assistance was obtained
7. Reports (II-1.07) on feelings concerning task.	a. Reason for data arrangement was discussed b. Problems of assembling and arranging data were listed c. Improvement of method or procedure was discussed

*Numbers in parentheses refer to revised NOBELS Taxonomy definition numbers.

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APPENDIX

A. Questionnaire

B. Taxonomy of Verbs Used in the Directions

A National Project

IDENTIFICATION AND DESCRIPTION OF NEW AND EMERGING OFFICE ACTIVITIES FOR CURRICULUM DEVELOPMENT

The
Vocational Education Department
THE COLORADO STATE UNIVERSITY

and

The Center for
Vocational and Technical Education
THE OHIO STATE UNIVERSITY

Projects: 66 and 91

ABSTRACT

Title: An Identification and Description of New and Emerging Office Activities for Curriculum Development

Principal Investigator: Harry Huffman

Duration: 1 September 1968 to 1 July 1969

Purpose: A major obstacle to the educational preparation of young people for office employment is that the training programs become rapidly obsolete. The purpose of this project is to identify and describe emerging office activities that are the result of changing technologies. Office activities are defined as groups of tasks that involve collection, processing, storage, and retrieval of information.

In this project, a broad view of clerical work is taken. It is looked upon as the preparation of input to, the processing of, and the handling of output from any information system whether by means of a computer or some other manual or mechanical procedure. The information system may involve data, words, ideas, and documents of all kinds. It may include hard copy, microfilm, microfiche, computer memories, and other methods of capturing information.

Objectives: 1. To produce a list of unambiguously described office activities that are coming into existence in business, industry, government, and organizations.

2. To convert the descriptions into performance goals for curriculum development for the schools.

Contribution to Education: It is expected that the resulting performance goals will be used to develop in-school instructional materials, training manuals, teacher education programs, and guidance brochures.

Procedures: Read office management literature with particular reference to changes in emphases between 1958 and 1968; obtain names of 200 nationally prominent authorities in office equipment, supplies, and activities; secure from them lists of emerging office activities; hold consortium in Denver, Colorado, with office management authorities to review the list of emerging office activities; hold similar meeting in Los Angeles, California; develop a checklist-questionnaire; send checklist to the original prominent authorities, the Denver group, and the Los Angeles group; analyze data; write performance goals; and prepare report for dissemination through U.S.O.E. Educational Research Information System (ERIC).

(Please turn to the next pages for the checklist-questionnaire)

Part I

In order to assist in analyzing your responses to this checklist, please supply the following information:

Write in the name of the state in which you are located. _____

Rank your responsibilities by assigning a 1, 2, and 3 in order of importance.

___Product Development	___Research	___Marketing
___Education & Training	___Engineering	___Finance
___Management Information	___Advertising	___Personnel
___Systems & Procedures	___Public Relations	___Sales
___Office Operations	___Data Processing	___Other
___Administrative Management		

The company you are head of or are employed by would be classified as: (Check one---write in classification if none given are appropriate.)

___Manufacturing	___Government	___Transportation, Communi-
___Construction	___Retailing	cation Facilities
___Wholesaling	___Finance	___Other _____

The number of employees in your total company:

___ 1 - 25	___ 51 - 100	___201 - 300	___ 401 - 500
___26 - 50	___101 - 200	___301 - 400	___ 501 - 1000
			___1001 or more

The approximate number of information-processing personnel (Typists, clerks, accountants, data processing employees, supervisors, secretaries, and other office personnel) employed under your responsibility.

___ 1 - 25	___ 51 - 100	___201 - 300	___ 401 - 500
___26 - 50	___101 - 200	___301 - 400	___ 501 - 1000
			___1001 or more

My answer given above was in terms of a branch, division, unit, department, building, etc. Write your answer here. _____

(1-4)	(6-7)	(8)	(9-10)

STUDY THE 5 FRAMES FOR DIRECTIONS. START HERE →

FRAME 1

Check whether the office activity (although it may have been in existence for some time) is Increasing in Importance. For example, due to changing or advancing office technology.

FRAME 2

Check whether the office activity is Emerging. For example, emerged recently or is now emerging as an activity that is different from those performed previously.

FRAME 3

Check one of the three choices for each level of office personnel to indicate your degree of requirement of the office activity.

1. You Would Like to Require This Ability From Your Personnel In The Future.
2. You Are Seeking Office Personnel With Such Abilities Now.
3. The Activity Has Not Changed Its Status Or Is Not Applicable For This Level of Personnel.

FRAME 4

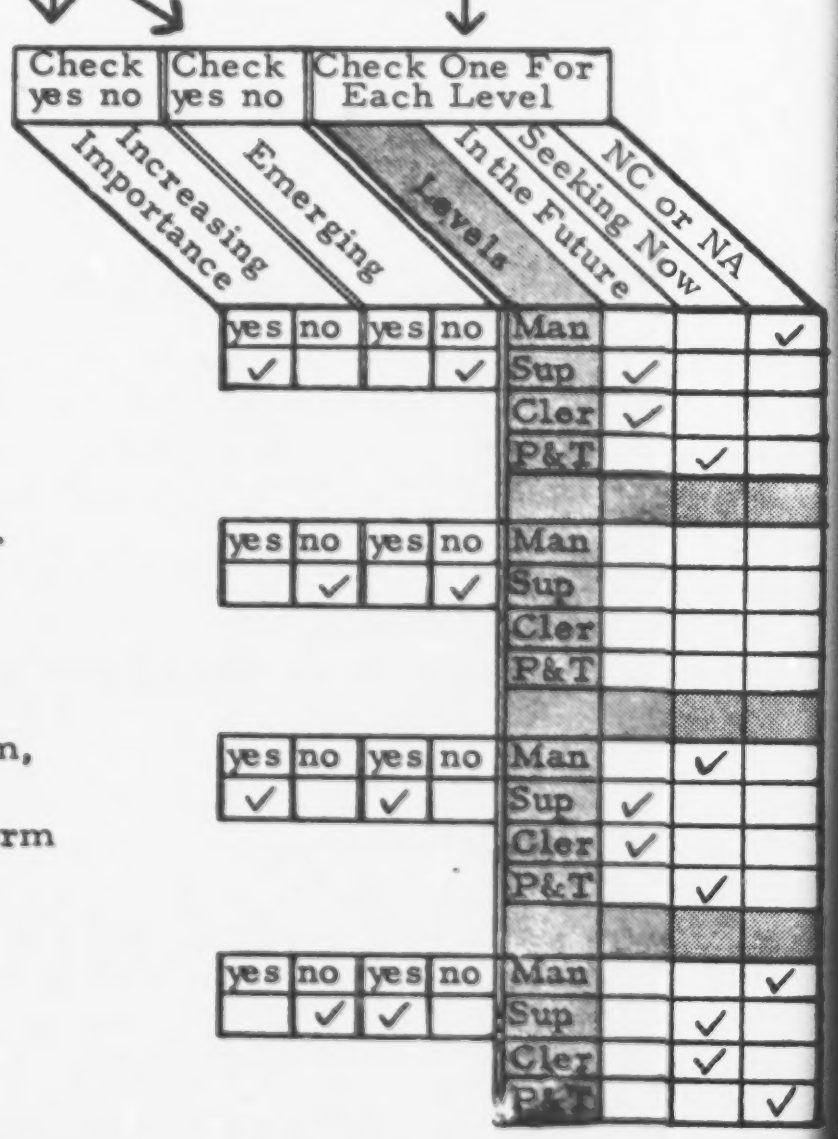
The four levels of office personnel used for this study are:

1. Man--Management (Those in major decision-making positions)
2. Sup-- Supervisory (Those in supervisory position)
3. Cler- Clerical (Input preparation, processing, and output handling of information)
4. P&T- Professional & Technical (Those in staff positions)

FRAME 5

These three comments refer to the examples illustrated at the bottom of this page.

1. The four statements below are examples. However, you might check them differently.
2. Under the columns Increasing in Importance and Emerging, you could have four possible combinations. They are Yes-No, No-No, Yes-Yes, and No-Yes.
3. Should you mark a No-No for Increasing in Importance and Emerging, you need not continue with any further checking for that statement. (see Example Statement No. 2 below.)



EXAMPLES

Exp. 1. Ability to identify information needed by management for decision-making purposes.

Exp. 2. Ability to complete assigned tasks on time.

Exp. 3. Ability to perform adequately in one system, switch to another system and perform adequately, and then switch back and perform adequately again--total job flexibility.

Exp. 4. Ability to operate microfilm and microfiche equipment.

(Code A begins on the next page.)

Part II

Would you please assist in assigning priorities to the following statements.

CODE A: All items below involve
ORGANIZATION STRUCTURE

1. Ability to comprehend and conceptualize the system of the organization or unit as a vast network of information flow and to understand as an employee one's position in the operation of the system.

2. Ability to describe and chart the structural organization of your firm or unit and to visualize one's role in the enterprise or unit.

3. Ability to recognize the importance of profit-making enterprises.

4. Ability to recognize the person's responsibility to a profit-making enterprise.

CODE B: All items below involve
PERSONNEL ADAPTABILITY

1. Ability to adjust positively to frequent or rapid changes in policies, management, etc., based on an acceptance of a reasonable explanation of the problem.

2. Ability to adjust quickly to new equipment, procedures, and work sequences brought about by rapid technological changes for the purpose of updating skills, increasing individual productive capacity, and raising company output.

3. Ability to participate in a back-up or supportive system during periods when the regular system is inoperative.

4. Ability to perform adequately in one system, switch to another system and perform adequately, and then switch back and perform adequately again. (Total job flexibility)

Check yes no (Importance)		Check yes no (Increasing)		Check One For Each Level (Emerging)		(In the Future)	(Seeking Now)	(NC or NA)
yes	no	yes	no	Levels				
				Man				
				Sup				
				Cler				
				P&T				
yes	no	yes	no	Man				
				Sup				
				Cler				
				P&T				
yes	no	yes	no	Man				
				Sup				
				Cler				
				P&T				
yes	no	yes	no	Man				
				Sup				
				Cler				
				P&T				
yes	no	yes	no	Man				
				Sup				
				Cler				
				P&T				
yes	no	yes	no	Man				
				Sup				
				Cler				
				P&T				
yes	no	yes	no	Man				
				Sup				
				Cler				
				P&T				

Check yes no	Check yes no	Check One For Each Level			
Increasing Importance	Emerging Levels	In the Future	Seeking Now	NC or NA	

CODE C: All items below involve
PERSONNEL RESPONSIBILITY

1. Ability to analyze the needs, attitudes, motivations, and actions of others to facilitate the desired outcomes.

yes	no	yes	no					
				Man				
				Sup				
				Cler				
				P&T				

2. Ability to interface between management and informational systems personnel.

yes	no	yes	no					
				Man				
				Sup				
				Cler				
				P&T				

3. Ability to recognize how inaccurate data entering a system may affect outcomes on succeeding jobs.

yes	no	yes	no					
				Man				
				Sup				
				Cler				
				P&T				

CODE D: All items below involve
COMMUNICATIONS - ORAL

1. Ability to gain rapport with all racial groups.

yes	no	yes	no					
				Man				
				Sup				
				Cler				
				P&T				

2. Ability to analyze feedback from oral communications.

yes	no	yes	no					
				Man				
				Sup				
				Cler				
				P&T				

3. Ability to elicit information from others who need not cooperate and hence must often be persuaded to cooperate.

yes	no	yes	no					
				Man				
				Sup				
				Cler				
				P&T				

CODE E: All items below involve
COMMUNICATIONS - WRITTEN--GRAPHIC

1. Ability to summarize output from information systems for the purpose of presenting management with concise reports.

yes	no	yes	no					
				Man				
				Sup				
				Cler				
				P&T				

2. Ability to communicate via datacommunication devices and to know the limitations, methods of utilization, and choose from available equipment for particular operations.

yes	no	yes	no					
				Man				
				Sup				
				Cler				
				P&T				

3. Ability to interpret and communicate the findings resulting from research studies.

yes	no	yes	no					
				Man				
				Sup				
				Cler				
				P&T				

Check yes	Check no	Check One For Each Level: Increasing Importance		Emerging		Levels: In the Future	Seeking Now	NC or NA
		yes	no	yes	no			
						Man		
						Sup		
						Cler		
						P&T		

CODE F: All items below involve SYSTEMS

1. **Ability to identify and select among a number of alternate combinations of equipment, procedures, and people for that combination which best accomplishes a certain established objective, purpose, or goal according to certain criteria.**

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

2. **Ability to identify information needed by management for decision-making purposes.**

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

3. **Ability to formulate plans for collection, processing, storage, and retrieval of information to meet the needs of the organization.**

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

4. **Ability to contribute to or conduct a feasibility study.**

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

5. **Ability to contribute to or conduct cost effectiveness studies.**

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

6. **Ability to ascertain what information should be programmed into an integrated information system.**

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

7. **Ability to formulate standards, to measure performance, and to implement control activities, comparing results with expectations and reporting exceptions.**

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

CODE G: All items below involve TECHNOLOGY

1. **Ability to construct basic flowcharts for projects, systems, or subsystems for purposes of planning, analyzing, implementing, controlling, and budgeting.**

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

2. **Ability to input data in an on-line, real-time system to obtain information for report preparation, office work production, and exception reporting.**

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

(CODE G continues on the next page.)

Check yes	Check no	Check One For Each Level: Increasing Importance	Emerging	Levels	In the Future	Seeking Now	NC or NA
yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

3. Ability to review information systems output to determine if there are errors.

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

4. Ability to determine what happened to produce the results in an information system and to provide corrections of data, if needed.

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

5. Ability to design forms, maintain a forms control program, and direct forms traffic.

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

6. Ability to utilize contemporary record storage techniques including microfilm, microfiche, aperture cards, etc., including indexing and operating the system.

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

7. Ability to prepare report, machine, or work schedules.

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

8. Ability to landscape an office or assist in landscaping an office to coordinate color, equipment, furniture, and lighting with information flow, worker satisfaction, and job efficiency.

CODE H: **All items below involve <u>HARDWARE</u>**

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

1. Ability to operate various pieces of new equipment through self-instruction or in-service training. (MTST, Electronic Calculator, ATS, etc.)

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

2. Ability to operate various computer data manipulation devices. (Input, Output, Storage, and Retrieval)

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

3. Ability to operate microfilm and microfiche equipment.

(CODE H continues on the next page.)

Check yes	Check no	Check One For Each Level: Increasing Importance	Emerging	Levels	In the Future	Seeking Now	NC or NA
yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

4. Ability to ascertain and analyze the capabilities and functions of copying machines, data reproduction equipment, and data display terminals.

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

5. Ability to prepare documents and visual aid materials in color for color copying equipment.

CODE I: All items below involve SOFTWARE

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

1. Ability to write and execute information systems programs.

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

2. Ability to locate information systems services and to select those that are appropriate.

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

3. Ability to convert data to appropriate coding schemes.

yes	no	yes	no				
				Man			
				Sup			
				Cler			
				P&T			

4. Ability to assemble and arrange input data for processing.

Return to:

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TAXONOMY[1] OF VERBS USED IN THE DIRECTIONS (TASKS)

ACCOMPLISH - implement, effect,fulfill, to use measures that will ensure the carrying out of

ACKNOWLEDGE - admit, confess, to acknowledge facts or situations

ACQUIRE - obtain, gain, procure, secure, to get possession of

ACTUATE - stimulating and maintaining of performance and effecting corrective measures

ADAPT - adjust, alter,change, vary, to change to fit the situation

ANALYZE - to determine the nature and relationship of parts

APPRAISE - inform, enlighten, notify, to impart information to make easier or faster the performance of the work

ARRANGE - putting into an order or system

ASSEMBLE - gather, accumulate, amass, to bring together from more than one source

ASSESS - evaluate, analyze, appraise, estimate, judge, rate, value, to determine the value of

CHECK - to inspect for satisfactory condition

CLARIFY - explain, elucidate, interpret, rephrase, to make something clear and understandable

COLLECT - securing data, supplies, or equipment

COMPARE - examining in order to determine similarities and differences

CONDUCT - escort, accompany, lead, to accompany for the purpose of guiding or as a mark of courtesy

CONVERT - transform, to make a major change in

CREATE - design, devise, originate, to formulate a plan or pattern to accomplish a desired objective

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[1]Huffman, Brady, Peterson, and Lacy. Op. Cit.

DEMONSTRATE - show, illustrate, to point out in order to clarify

DESCRIBE - narrate, recount, relate, report, to give an account of in an illustrative manner

DESIGN - devise, draw, illustrate, invent, lay out, originate, sketch, to devise for a specific function

DEVISE - design, contrive, plan, invent, to devise for a specific function

DISTINGUISH - differentiate, discriminate, to determine distinctions by perceiving and evaluating differences

DRAW - devise, design, illustrate, invent, lay out, originate, sketch, to devise for a specific function

ESTABLISH - initiate, inaugurate, institute, introduce, launch, to set going

EVALUATE - analyze, appraise, assess, estimate, judge, rate, value, to determine the value of

FAMILIARIZE - orient, acquaint, direct, to acquaint an individual with the office environment

FOLLOW - obey, comply, heed, to follow directions

FORMULATE - design, create, devise, originate, to formulate a plan or pattern to accomplish a desired objective

GATHER - accumulate, amass, assemble, to bring together from more than one source

MODIFY - making changes

OBTAIN - acquire, gain, procure, secure, to get possession of

ORGANIZE - establishing the work environment

PERFORM - carry out, execute, to do what is provided for or required

POLL - canvass, solicit, to determine or seek information by the taking of a poll

PREDICT - forecast, anticipate, prognosticate, project, to attempt to indicate future conditions

PREVIEW - to make a preliminary survey for collecting information

PROCURE - obtain, acquire, gain, secure, to get possession

RECEIVE - obtain, acquire, gain, procure, secure, to get possession

RECOMMEND - suggest, advocate, urge, to offer something for consideration

RECORD - placing data or information on paper, film, tapes, or other media

REGISTER - book, enter, log, to enter in a register

REPORT - describe, narrate, recount, relate, to give an account of in an illustrative manner

REVISE - amend, improve, rearrange, revamp, streamline, update to improve, amend, or update

SEARCH - hunt, investigate, look for, probe, seek, to look for data

SECURE - obtain, acquire, gain, procure, to get possession of

SELECT - choose, discriminate, pick, screen, to choose from a number of things available

SPECIFY - detail, enumerate, to give information minutely

STORE - setting aside for future use

SUBMIT - to give to another for his consideration

TRACE - copy, facsimile, keypunch, microfilm, photograph, reproduce, typewrite, to make copies of by hand or by the use of a typewriter or copying machine